PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ^{6} **:**
H04Q

A2

(11) International Publication Number: **WO 98/08344**

(43) International Publication Date: 26 February 1998 (26.02.98)

(21) International Application Number: PCT/US97/14121

(22) International Filing Date: 8 August 1997 (08.08.97)

(30) Priority Data:
08/693,678 13 August 1996 (13.08.96) US

(71) Applicant *(for all designated States except US)*: THE VIRTUAL PRESS [US/US]; 1075 Curtis Street, Menlo Park, CA 94025 (US).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: SACHS, James [US/US]; 503 Gilbert Avenue, Menlo Park, CA 94025 (US). POMEROY, Thomas, W. [US/US]; 168 Hawthorne, Atherton, CA 94027 (US).

(74) Agents: BLAKELY, Roger, W. et al.; Blakely, Sokoloff, Taylor & Zafman, 7th floor, 12400 Wilshire Boulevard, Los Angeles, CA 90025-1026 (US).

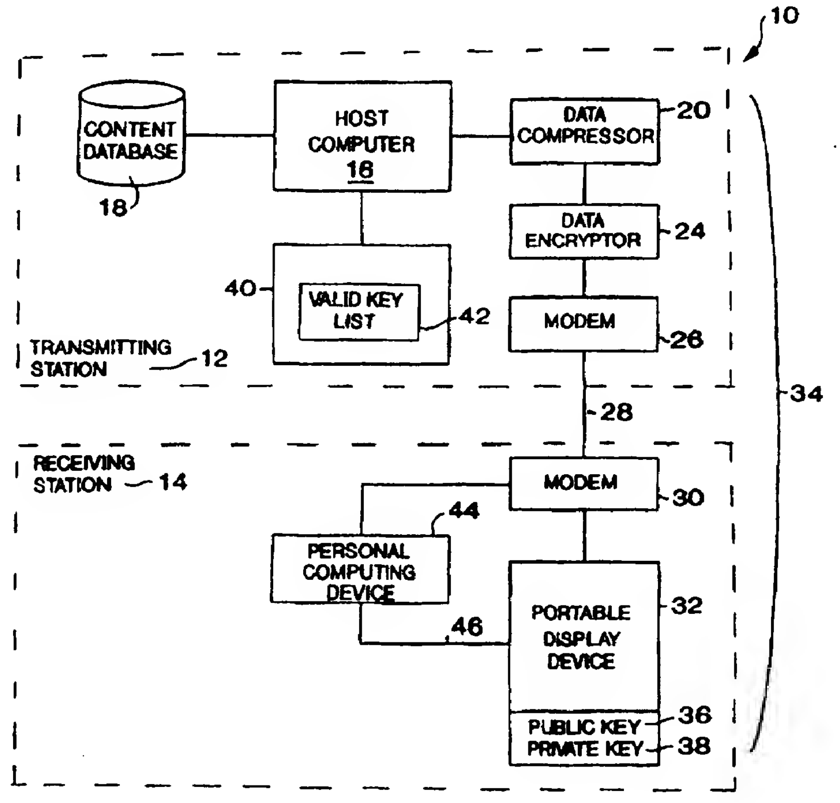
(81) Designated States: AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published
Without international search report and to be republished upon receipt of that report.

(54) Title: METHOD AND APPARATUS FOR VIEWING ELECTRONIC READING MATERIALS

(57) Abstract

An electronic publication publishing and distribution system is provided for dissemination of written materials that can be read on a portable electronic book. A host computer contains an inventory of written materials in electronic form, that can be selected and then downloaded into the portable electronic book's memory. The host computer keeps track of the transactions, and encodes the data prior to downloading, using an encryption system involving a security number that is unique to the portable electronic book. The encrypted data cannot be decrypted until it is resident in the memory of the portable electronic book. Upon receipt of the encrypted data, the portable electronic book decrypts the data, and can display the text of the original material on its display screen. The portable electronic book has a central processing unit with an operating system for controlling the functions of the portable electronic book. There is non-volatile electronic memory storage for retaining publications in the portable electronic book. A plurality of electronic keys is provided in the portable electronic book that corresponds to graphical representations such as icons on the portable electronic book display adjacent to each key. These keys are integral to the user interface for controlling the devices.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania
AM	Armenia
AT	Austria
AU	Australia
AZ	Azerbaijan
BA	Bosnia and Herzegovina
BB	Barbados
BE	Belgium
BF	Burkina Faso
BG	Bulgaria
BJ	Benin
BR	Brazil
BY	Belarus
CA	Canada
CF	Central African Republic
CG	Congo
CH	Switzerland
CI	Côte d'Ivoire
CM	Cameroon
CN	China
CU	Cuba
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
ES	Spain
FI	Finland
FR	France
GA	Gabon
GB	United Kingdom
GE	Georgia
GH	Ghana
GN	Guinea
GR	Greece
HU	Hungary
IE	Ireland
IL	Israel
IS	Iceland
IT	Italy
JP	Japan
KE	Kenya
KG	Kyrgyzstan
KP	Democratic People's Republic of Korea
KR	Republic of Korea
KZ	Kazakstan
LC	Saint Lucia
LI	Liechtenstein
LK	Sri Lanka
LR	Liberia
LS	Lesotho
LT	Lithuania
LU	Luxembourg
LV	Latvia
MC	Monaco
MD	Republic of Moldova
MG	Madagascar
MK	The former Yugoslav Republic of Macedonia
ML	Mali
MN	Mongolia
MR	Mauritania
MW	Malawi
MX	Mexico
NE	Niger
NL	Netherlands
NO	Norway
NZ	New Zealand
PL	Poland
PT	Portugal
RO	Romania
RU	Russian Federation
SD	Sudan
SE	Sweden
SG	Singapore
SI	Slovenia
SK	Slovakia
SN	Senegal
SZ	Swaziland
TD	Chad
TG	Togo
TJ	Tajikistan
TM	Turkmenistan
TR	Turkey
TT	Trinidad and Tobago
UA	Ukraine
UG	Uganda
US	United States of America
UZ	Uzbekistan
VN	Viet Nam
YU	Yugoslavia
ZW	Zimbabwe

METHOD AND APPARATUS FOR VIEWING ELECTRONIC READING MATERIALS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to the publication and distribution of electronic reading materials, and to a method and apparatus for viewing electronic reading materials.

2. Description of the Related Art

Electronic reading materials are commonly available on various on-line computer services, such as America On Line, Compuserve, the Internet and the World Wide Web. These materials are typically in the public domain, as there is no accepted method for distribution that maintains the integrity of copyrighted materials. This is due in part to the ease with which the recipient of the documents can redistribute them at no cost to potentially thousands of other subscribers, with no accounting for the royalties that are due to the copyright holder.

Although it is a simple process for on-line subscribers to download these materials to their computer using a telephone line modem or other communication system, it is not practical for multiple-page documents to be read while sitting at a computer terminal.

Accordingly, there is a need in the technology for a system for retaining a library of publications and for selectively loading these publications into a portable viewer with non-volatile memory storage. There is also a need in the technology for providing a secure communications system that permits downloading of copyrighted materials without concern for their proliferation through present on-line services.

SUMMARY OF THE INVENTION

The present invention is directed to a system for retaining a library of publications and for selectively loading these publications into a remote portable electronic viewing unit with non-volatile memory storage. The present invention also provides for a secure communications system that permits downloading of copyrighted materials without concern for their proliferation through present on-line services.

One embodiment of the present invention includes an electronic publication and distribution system having a host computer which communicates with a plurality of remote, portable electronic viewing units, such as portable electronic books. The portable electronic books are designed to be able to load publications, selected from a bookstore or other on-line source via the host computer, into the remote computer memory. Each portable electronic book has a modem or other communications part for receiving and transferring data between the host and the portable electronic book. The portable electronic book has a central processing unit with an operating system for controlling the functions of the portable electronic book. There is non-volatile electronic memory storage for retaining publications in the portable electronic book. A plurality of electronic switches are provided in the portable electronic book that correspond to graphical representations such as icons on the portable electronic book display adjacent to each switch. These switches are integral to the user interface for controlling the devices. A digitized pen input system can also be provided for the user interface.

Accordingly, an object of the invention is to provide an improved publication distribution system and a method of storing publications and for loading a selected program or set of publications into an electronic display device.

Another object of the invention is to provide a method of maintaining a publication "virtual bookstore" that allows for an effective manner of examining the contents according to individual interests, and selecting the material to download.

A further object of the invention is to provide a portable electronic viewing unit that is compatible with the virtual bookstore, and the corresponding security and communication features.

A further object of the invention is to provide a user interface in the portable viewer that facilitates the selection, navigation and manipulation of the published works as they are read.

DESCRIPTION OF THE DRAWINGS

Figure 1 is an overall block diagram of the publication and distribution system 10 of the present invention.

Figure 2A is one embodiment of the portable display unit 32 of the present invention, as utilized in the publication and distribution system 10 of Figure 1.

Figure 2B is a detailed block diagram of the portable display unit 32 of Figure 2A.

Figure 3A is an exemplary main screen display page 60a provided on screen 60 of Figures 2A and 2B, illustrating the features of one embodiment of the present invention.

Figure 3B is an exemplary function icons screen display page 60b provided on display screen 60 of Figures 2A and 2B, illustrating the features of another embodiment of the present invention.

Figure 3C illustrates an exemplary font 123 utilized by the portable display unit 32 of the present invention for displaying text.

Figures 4A-4H illustrate additional exemplary display pages 60c-60h corresponding to additional features provided by the portable display unit 32 of the present invention.

Figures 5A and 5B are flowcharts illustrating the main process S200 of viewing electronic reading materials as utilized by the publication and distribution system 10 of the present invention.

Figures 6A-6H are flowcharts illustrating the subprocesses S224, S226, S228, S232, S236, S240, S244 and S248, shown in Figures 5A and 5B.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

In the following description, the terms electronic publications, reading materials, text and documents are used interchangeably and generally refer to reading materials, pictures and graphics that can be read by literate individuals. The features: remote viewing system, portable viewer, electronic book and display device, refer to a system for viewing reading materials. The terms: user interface, navigation, control and manipulation, refer to methods for controlling the environment of the reading materials. Typical applications are reading materials that are of such a time-sensitive nature that publication and distribution via conventional means is not practical. Other applications include materials that consist of a collection of texts from a plurality of sources which are compiled in such a way as to provide value to the reader, materials currently out of print, and materials of highly specialized interest, limited interest or of unknown interest so as to not justify publication in printed form.

Referring now to Figure 1, the publication and distribution system 10 of the present invention includes transmitting station 12 and receiving station 14. The transmitting station 12 includes host computer 16, content database 18, data compressor 20, data encryptor 24, modem 26 and memory 40. The receiving station 14 includes modem 30, which is connected to a portable display unit 32 and optionally, a personal computing device 44. It should be understood that, although the data communication between the computer 16 and the computer 44 or device 32 is described as unidirectional (from the computer 16 to the computer 44 or device 32), the system 10 allows for bi-directional communication.

In addition, one of ordinary skill in the art will recognize that either one side or both sides of the system 10 can be embodied as a transmitter/receiver. The publication and distribution system 10 is controlled by a host computer 16 located within the transmitting station 12. The host computer 16 can be any computer, data processing system, or World Wide Website capable of handling the peripheral devices described below.

The host computer 16 manages a content database 18 which contains primarily copyrighted publications or works. In the process of distributing these works, the host computer 16 communicates with a portable display unit 32 located within the receiving station 14. The receiving station 14 includes modem 30, which is connected to a portable display unit 32 through a communications channel 34, which may be a digital data stream on a telephone line, an Integrated Services Digital Network (ISDN) line, a coaxial cable, a fiber optic cable or any other serial streaming medium.

As shown in Figure 1, the communications channel 34 includes data compressor 20, data encryptor 24 and modem 26 which are located at the transmitting station 12, and modem 30, and optionally, a personal computing device 44 and portable display units which are located in the receiving station 14. The host computer 16 first interrogates the portable display unit 32 through the data channel 34 for its unique serial number, which consists of a number that serves as a "public key" 36 in the data encryption system. The host computer 16 compares the public key 36 against a valid key list 42 located in memory 40 to determine whether it is a valid key. If it is, the host computer 16 passes the data through the data compressor 20, which may be a software algorithm, hardware device, or combination of the two.

The host computer 16 then uses this key 36 to encrypt the selected published works from the content database 18 using a corresponding private key from the key list 42, and a data encryptor 24, which may be a software algorithm, hardware device, or combination of the two, as is known in the technology.

The encrypted, compressed data is then sent to the display device 32 through a modem 26 located at the transmitting end of the system 12. The modem 26 modulates the data according to the requirements of a transmission medium 28, which may be a landline, a satellite, a cable, a fiber or other telecommunications medium. At the receiving end, a modem 30 demodulates the data provided in a transmission medium 28. The modem 28 can then provide this data to the portable display unit 32, or alternatively, to a personal computing device 44, which then provides the data to the display device 32 through an electronic connection 46.

Once the data is in the portable display unit 32, the data is decrypted using the private key 38 of the device 32. This is accomplished either through a software algorithm, a hardware device, or combination of the two, as is known in the technology. The resulting compressed data is then stored in non-volatile memory in the portable display unit 32.

Figure 2A is one embodiment of the portable display unit 32 of the present invention, as utilized in the publication and distribution system 10 of Figure 1. The portable display unit 32 a slim rectangular unit of six inches in width, seven inches in height and one inch thick. The portable display unit has a front face 50, a top 52, a base 54, a first side 55, a second side 56 and a back 58. The front face 50 includes a display screen 60, which may be a liquid crystal display (LCD), cathode ray tube (CRT), electro-luminescent display (EL) or other display device as is known in the technology. In a preferred embodiment, the display screen 60 is an LCD. Located next to the display screen 60, along the second side 56, are a plurality of keys or function switches 62, which are used to select icons displayed on the display screen 60. These icons represent a variety of functions that are provided by the portable display unit 32, as will be discussed in detail in the following sections. The brightness of the display screen 60 is controlled by an LCD adjust switch 64 located below the display screen 60, at the bottom of the front face 50.

Located on the top 52 of the portable display unit 32 is a switch 66 for powering the portable display unit 32 on or off. In addition, an RJ-11 phone jack 68 is located on the top 52, as is a connector 70 for connection to an AC adapter 72. The phone jack 68 and connector 70 may alternatively be located on the back 58 of the portable display unit 32. In addition, the portable display unit 32 may be powered by batteries such as NiMh batteries. The portable display unit 32 also includes an electronics module (not shown), which includes a central processing unit (CPU), memory units such as Read-Only Memory (ROM), Random Access Memory (RAM) and non-volatile Random Access Memory (NVRAM), an internal modem, the LCD driver, a charge circuit and a clock, and optionally, a pen and digitizer screen overlaid on the display screen 60.

Figure 2B is a detailed block diagram of the portable display unit 32 of Figure 2B. The portable display unit 32 is controlled by a central processing unit (CPU) 80, which can execute program instructions from Read Only Memory ROM (ROM) 82, non-volatile Random Access Memory (NVRAM) 84, or Random Access Memory (RAM)

86. These instructions 82a, 84a and 86a located in ROM 82, NVRAM 84 and RAM 86 respectively, provide the control for all the device operations of the portable display unit 32. The CPU 80 is coupled to address decode circuit 88, which also comprises miscellaneous logic circuitry. The address decode circuit 88, which performs address decoding, is coupled to a speaker driver 90, a serial I/O driver 92, function switches 62, a pen digitizer 63 and a high speed modem 96. The speaker driver 90 drives speakers (not shown) connected to the portable display unit 32, while the serial I/O driver 92 drives the I/O devices such as a printer, or a connection to a standard personal computer.

The printer connected via the serial I/O driver 92 enables the portable display unit 32 to produce a hard copy of the published materials stored in the memory of the portable display unit 32. In the preferred embodiment, the portable display unit 32 will not permit the printing of copyrighted works that have been purchased through the host computer 16. As described earlier, the switches 62 are used for selecting icons displayed on the display screen. Alternatively, the switches 62 may exist as a touch-sensitive overlay on the top 52 of display screen 60 of the display unit 32. In the latter case, the user simply touches the surface of the display screen 60 directly above the icon of the function desired.

The modem 96 may be internal or external to the display device 32, and is used to communicate with the host computer 16 of Figure 1. If an external modem is used, it may be represented by modem 30 in Figure 1. In this case, modem 96 in Figure 2 will not be used. If an internal modem such as modem 96 is used, then modem 30 of Figure 1 will not be utilized. For secure data transactions, serialized public and private keys 82b or 84b are used. The public and private keys 82b or 84b are stored either in ROM 82 or NVRAM 84, or any other semiconductor device as is known in the technology. As discussed earlier, the display device 32 displays its information on a display screen 60, which is controlled by a display controller 98 that is compatible with the display 60.

Operation of the portable display unit 32 is accomplished through a plurality of function switches 62 located on the face 50 of the portable display unit 32, along the second side 56, each of which corresponds to functions the user wishes to activate. The function of the switches 62 can be changed under software control. Alternatively, operation of the portable display unit 32 may be controlled through input via pen 63. The pen 63 may be a stylus pen, as is known in the art. Such stylus pens are available in various technologies, including but not limited to touch sensitive, resistive stylus pens. In the present preferred embodiment, the controlling program identifies to the user, the function of the switches 62 by displaying a representation of the functions of the switches 62 on a display page 60a (see Figure 3A) on display screen 60. The representations are located adjacent to the switches 62 and may be in the form of an icon, text, or combination of the two. In a preferred embodiment, the representation is an icon. The icon images 82c are stored in ROM 82 or in NVRAM 84.

Referring now to Figures 3A and 3B, the operation of the device 32 is made by first selecting one of a plurality of functions represented by icons 62, text, or both on a display page 64a of the display screen 60 by pressing on a switch 62 that corresponds to the function desired. These physical switches may be adjacent to the display screen 60, or may exist as a touch-sensitive overlay on top of display screen 60 of the portable display unit 32. In the latter, the user simply touches the surface of the display screen 60 directly above the icon of the function desired.

Figure 3A is an exemplary main display page 60a provided on display screen 60 of Figures 2A and 2B, illustrating the features of one embodiment of the present invention. When the portable display unit 32 is powered on, the display screen 60 first displays the main display page 60a, as shown in Figure 3A. On the main display page 60a, display text 100, graphics (not shown) and/or photographs (not shown) that constitute electronic reading materials are displayed. The display text 100, graphics or photographs may be displayed alone or in combination. Navigation of the reading materials is effected by different functions as represented by a plurality of function displays, such as icons 102. One such function corresponds to the effect of "turning the page" and an icon 104 representing turning to the next page is provided for the selection of this function. When thus selected, the display screen 60 will display the text and graphics from the next page. Similarly, an icon 106 representing the function of turning to the previous page enables the user to go back through the text 100 when the icon 106 is selected. A third icon 108 enables the user to view other display functions when selected. These additional display functions are illustrated in Figure 3B.

When the display function icon 108 is selected, the display screen 60 displays the display page 60b as shown in Figure 3B. The display page 60b illustrates text 100 along with a plurality of function icons such as the "mark page" icon 120, the "change font" icon 122, the "flip through pages" icon 124, the "dictionary" icon 126, the "underline" icon 128, the "call bookstore" icon 130, the "connect to PC" icon 1321, the "switch books" icon 134, the purge book" icon 136, an "exit" icon 137 and the "hide icons" icon 138. Each of the icons 120-138 represent additional functions provided by the portable display unit 32.

When the "mark page" icon 120 is selected, the portable display unit 32 marks the current page by displaying a marker tab on the page. In the event that the text 110 is not of a size that suits the user, the size of the font on text 110 is displayed and can then be enlarged or reduced. In this case, the "change font" icon 122 may be selected so as to change the current font size to the next font size in a pre-determined series of fonts, ranging in order from a small font to a large font. Each time the switch 65 corresponding to icon 122 is pressed, (or, in an embodiment using a touch-sensitive display screen, when the icon 122 is pressed by the user) the font will switch to the next pre-determined font size. For the larger font sizes, an "anti-aliased" display technique may be used to provide character smoothing. Examples of such an "anti-aliased" display technique includes that described in U.S. Patent No. 5,233,334, entitled "Text Display Apparatus and a Method of Displaying Text" issued August 3, 1993, and U.S. Patent No. 5,305,428 entitled "Image Forming Apparatus" issued April 19, 1994.

In the preferred embodiment, the font used to display the text 100 is designed to provide maximal reading clarity by utilizing the individual pixels of the display screen 60 in an optimal manner as shown by the font 123 in Figure 3C. This is unlike typical screen displays which use "What You See Is What You Get (WYSIWYG)" technology to represent as best as possible what the text 100 will look like when printed. In addition, a word, sentence or image denoted in bold or otherwise altered in form, can have a "warm link" associated with it. If this link is activated by means of the pen 63 or a switch 64 which corresponds to be "warm link" function, then the next time the portable display unit 32 is on-line with the host computer 16, it can quickly jump the display page 60 that this link points to.

Figures 4A - 4F are exemplary display pages 60c-60h corresponding to other features of the portable display unit 32. In particular, Figure 4A illustrates an exemplary display page 60c which is displayed when the "dictionary" icon 124 as shown in Figure 3B is selected. The portable display unit 32 includes the ability to automatically look up and display the dictionary definition of a word 140 in the text 100. When the user desires to look up a word 140, the "?" icon 141 is selected. When this occurs, the CPU 80 looks up the word 140 in the dictionary 82d located in ROM 54 (see Figure 2B) and the display 60 shows the definition in a window 142 that the user can remove by selecting an "OK" icon 144, or waiting for a pre-determined amount of time to pass.

If the word 140 is not in the dictionary 82d, the CPU 80 can look in the supplemental word list 84e located in NVRAM 84 for a definition. This supplemental word list 84e located in NVRAM 84 is downloaded with the text 100, and provides words that are pre-determined to be absent in the resident dictionary 84e located in ROM 82d.

The display page 60c further includes a number of icons 146-152 which may be used to move the cursor up a line, to move the cursor to the left by a word, to over the cursor to the right by a word or to move the cursor down by a line, respectively. It also includes an "exit" icon 153 which when selected, facilitates exiting from the current page. In addition, the display page 60c also displays a "hide icons" icon 154, which when selected, hides all the icons 141, 146-154 displayed on the page 60c.

Figure 4B illustrates a another exemplary display page 60d provided on display screen 60 of Figures 2A and 2B when the "underline" icon 128 as shown in Figure 3B is selected. As shown, the display screen 60 provides display page 60d which displays two icons, namely, the "underline last sentence" icon 156 and "underline next sentence" icon 158, which allow the user to move forward or backward through the text, underlining selected one sentence at a time, respectively. The "hide icons" icon 154 is also displayed. A sentence can also be underlined by "stroking" the display screen 60 by touch or with the pen 63 (when available). In a further embodiment, an additional function for automatically skipping forward (or backwards) to the next (or previous) page with some underlining or highlighting on it, may be provided.

Figure 4C illustrates an exemplary display page 60e, which is displayed on display screen 60 of Figures 2A and 2B when the "call bookstore" icon 130 as shown in Figure 3B is selected. As shown the display page 60e provides icons 160-169 for: locating a new local phone number, dialing 9 first, dialing 8 first, calling internationally, entering the number to dial and to hide the icons on the display page 60e, respectively.

Figure 4D illustrates an exemplary display page 60f, which is displayed on display screen 60 of Figures 2A and 2B upon engaging a bookstore number as shown in Figure 4C. Once a telephone number for a virtual bookstore has been selected and communications is established, the portable display unit 32 displays a display page 60f which provides an overview of the features available from a particular virtual bookstore. The display page 60f includes a window 170 which provides online advertising, and icons 172 which enable the user to select from major section listings such as fiction, non-fiction, biographies, history, reference, business materials and electronic magazines or newspapers. An "optional features" icon 174 is also provided for providing additional features. In addition, a plurality of windows 176 display the personal bookshelf titles of books already purchased by the user. An "exit bookstore" icon 177 allows the user to exit this page 60f when selected, while a "hide icons" icon 178 allows the user to hide the displayed icons.

Figure 4E illustrates an exemplary display page 60g, which is displayed on display screen 60 of Figures 2A and 2B when the "connect to PC" icon 132 as shown in Figure 3B is selected. This feature includes the ability to "navigate" the content database 18 of Figure 1 connected to the host computer 16. A display page 60g provides a plurality of commands 180 corresponding to icons 181. By selecting among these commands 181, the user can have information displayed on display page 60g which enables them to view information about the content database 18, and facilitate selection, purchasing and downloading.

Figure 4F illustrates an exemplary page 60h, which is displayed on display screen 60 of Figure 2A and 2B when the "connect to PC" icon S132, as shown in Figure 3B, is selected. In addition, the display page 60h displays a "start downloading" icon 182, which when selected, enables the portable display unit 32 to proceed downloading of selected pages from the computer 44 of Figure 1. A "hide icons" icon 183a is also included for hiding the icons displayed and an "exit" icon 183b permits the user to exit from this feature when selected.

Figure 4G illustrates an exemplary display page 60i, which is displayed on display screen 60 of Figures 2A and 2B when the "switch books" icon 134 as shown in Figure 3B is selected. As shown, the display page 60i enables the user to switch from book A to book B by selecting icons 184 or 186 respectively.

Figure 4H illustrates an exemplary display page 60j which is displayed on display screen 60 of Figures 2A and 2B when the "purge book" icon 136 as shown in Figure 3B is selected. As shown, the display page 60j enables the user to select a book to read or to remove. A number of books, for example, books C, D, E are displayed on display page 60j. Adjacent to each book C, D or E are two icons 190 and 192, which when selected will respectively keep the book C, D or E, or purge the book C, D or E displayed. Icon 194 allows the displayed icons to be hidden.

Figure 5A is a flowchart illustrating the process S200 of viewing electronic reading materials as utilized by the portable display unit 32 of the present invention. The process S200 begins from a start state S202, the process S200 proceeds to process step S204 where the process S200 opens an active book to a selected or a current page in accordance with user selection. The data for the active book is decompressed by the portable display unit 32 and displayed, along with icons representing the functions available. The process S200 then proceeds to process step S206, where it decompresses the next and last pages of the active book in advance. The process S200 then proceeds to decision step S208 to query if the switch corresponding to the "page turn" icon 104, as shown in Figure 3A, has been selected. If so, the process S200 proceeds to process step S210, where it displays the next or the last page, as selected by the user. The process S200 then returns to process step S206. If the "page turn" icon 104 (Figure 3A) has not been selected, the process S200 proceeds to decision step S212 to query if the "display function icons" key 108 (Figure 3A) has been pressed. If not, the process S200 returns to decision step S208. However, if the "display function icons" key 108 has been pressed, the process S200 proceeds to process step S210, where it displays the function key icons.

Next, the process S200 proceeds to decision step S216, where it determines if the "off" key 66 (Figure 2A) has been pressed. If so, the process proceeds to process step S218, where it saves the current page and turns off the portable display unit 32. The process S200 then terminates at process step S220. If the "off" key 66 has not been pressed, the process S200 proceeds to decision step S224, where it determines if the "dictionary" key 126 (Figure 3B) has been pressed. If so, the process S200 proceeds to process step S224, which is a sub-process for providing the dictionary features of the portable display unit 32.

If the "dictionary" key 126 has not been selected, the process S200 proceeds to decision step S225, where it determines if the "call bookstore" key 130 (Figure 3B) has been selected. If so, the process S200 proceeds to process step S226, which is a sub-process for providing the call bookstore features of the portable display unit 32. If the "call bookstore" key 130 has not been selected, the process S200 proceeds to decision step S227, where it determines if the "download" key 182 (Figure 4F) has been selected. The "download" key 182 may be implemented on the main display page 60b (Figure 3B) or on another display page such as that shown in Figure 4F. If the process S200 determines that the "download" key 182 has been pressed, it proceeds to subprocess S228. If not, it proceeds to decision step S230, where it determines if the "flip pages" key 124 (Figure 3B) has been selected. If so, the process S200 proceeds to process step S234, which is a sub-process for providing the "flip pages" features of the portable display unit 32.

If the "flip pages" key 124 (Figure 3B) has not been selected, the process S200 proceeds to decision step S234, where it determines if the "view jacket" key (not shown in Figure 3B) has been pressed. If so, the process S200 proceeds to process step S236, which is a sub-process for providing the "view jacket" features of the portable display unit 32. If the "view jacket" key has not been selected, the process S200 proceeds to decision step S238.

At decision step S238, the process S200 determines if the "change book key" (not shown in Figure 3B) has been pressed. If so, the process S200 proceeds to process step S240, which is a sub-process for providing the "change book" features of the portable display unit

32. If the "change book" key has not been selected, the process S200 proceeds to decision step S242, where it determines if the "underline" key 128 (Figure 3B) has been pressed. If so, the process S200 proceeds to process step S244, which is a sub-process for providing the "underline" features of the portable display unit 32. If not, the process S200 proceeds to decision step S246, where it determines if the "change font size" key 122 (Figure 3B) has been depressed. If so, the process S200 proceeds to process step S248, which includes a sub-process for providing the "font size" features of the portable display unit 32.

If the "change font size" key 122 (Figure 3B) has not been selected, the process S200 proceeds to decision step S250 to determine if the "mark page" key 120 (Figure 3B) has been pressed. If so, the process S200 proceeds to process step S252, where it marks the page and displays the marker tab.

The process S200 then returns to the start state S202. If the "mark page" key 120 (Figure 3B) has not been selected, the process S200 proceeds to decision step S256, where it determines if the "exit" key 137 (Figure 3B) has been depressed. If so, the process S200 proceeds to process step S258, where it re-displays the page and main icons. If the "exit" key 137 has not been selected, the process S200 proceeds to process step S260, where it continues to monitor the selection of the various keys representing the features of the display portable device 32.

As shown in Figure 6A, the process S224 begins with start state and proceeds to process step S262 where the dictionary icons are displayed. The first word on the display page is highlighted. The process S224 then proceeds to decision step S264, where it determines if there is cursor movement. If so, the process S224 proceeds to process step S266 where the cursor is moved accordingly and the new word selected is highlighted. The process S224 then returns to decision step S264. If there is no cursor movement, the process S224 proceeds to decision step S268 where the process S224 determines if the lookup word icon 141 (Figure 4A) has been selected. If not, the process S224 proceeds to decision step S270 where it queries if the exit icon 153 (Figure 4A) has been selected. If not, the process S224 returns to decision step S264. If the exit icon 153 has been selected, the process S224 terminates. If the process S224 determines that the lookup word has been selected in decision step S268, the proceeds to process step S272, where it lookups the selected word in the internal dictionary. The process S224 then proceeds to decision step S274 where it determines if the word has been found. If so, the process S224 proceeds to process step S276 where it displays the definition of the words selected.

Next, the process S224 proceeds to the decision step S278, where it determines if the cancel icon 144 (shown as an "OK" icon in Figure 4A) has been selected. If not, the process S224 proceeds to return to decision step S270, where it continues to determine if the exit icon 144 has been selected. If the exit icon 144 has been selected, the process S224 proceeds back to decision step S264. If the process S224 determines that the word selected to be looked-up in the internal dictionary has not been found in decision step S274, the process S224 proceeds to process step S280, where it looks up the word in the supplemental dictionary. It then proceeds to decision step S282, where it queries if the word has been found. If so, it proceeds to process step S266, where the definition is displayed. If not, the phrase "Word Not Found" is displayed on the display page, as shown in process step S284 and the process S224 then proceeds to decision step S278, where it continues to monitor if the cancel icon has been selected.

Beginning from the start state, as shown in Figure 6B, the process S226 proceeds to process step S290, where the process S226 displays the "call book store" display page (see Figure 4C) in telephone settings. The process S226 then proceed to proceeds to decision step S292, where it queries if the settings should be changed. If not, it proceeds to decision step S294, where it queries if a call should be placed. If it is determined in decision step S292 that a setting has to be changed, then the process S226 proceeds to process step S296, where the new settings choices are displayed. The process S226 then proceeds to decision step S298, where it queries if a new choice has been selected. If so, the process S226 proceeds to process step S300, where the new setting is set. The process S226 then returns to process step S296. If the process S226 determines a decision step S298 that a new choice has not been selected, it proceeds back decision step S294.

At decision step S294, the process S226 queries if a call should be placed. If not, the process S226 proceeds back to decision step 294 and continues to monitor if a call should be placed. If at decision step S294, it is determined that a call should be placed, the process S226 proceeds to process step S302, where the book store is called. The process S226 is then proceeds to decision step S304, where it queries if it has been connected properly. If the connection has been properly placed. If not, the process S226 proceeds to process step S306, where the connection error message is displayed. The process S226 then proceeds back to process step S290. If a proper connection has been established, the process S226 proceeds to process step S308, where the incoming text, graphics, and icons are displayed on the display page. The process S226 then proceeds to decision step S310, where it queries if an icon has been selected. If so, the process S226 proceeds to process step S312, where it sends the identification of the icon to the book store. The process S226 then returns to process step S308. If an icon has not been selected, the process S226 proceeds to decision step S314, where it queries if downloading has been requested. If not, the process S226 queries if it should sign off. If not, the process S226 proceeds back to process step S308, where it continues to display incoming text, graphics and icons. If the process S226 determines at decision step S316, it should sign off, then it proceeds to disconnect the modem connection at step S318 and then it terminates. If at decision step S314, the process S226 determines that downloading has been requested, the process S226 proceeds to process step S320.

As shown in Figure 6C, the process S228 begins from the start state and proceeds to decision step S310, where it queries if there is room for a new book. If not, the process S228 proceeds to process step S332, where it determines which book is to be purged (see Figure 4H). The process S228 then proceeds to process step S334, where it purges the book selected and then proceeds back to decision step S330, where it queries if there is room for a new book. If at decision step S330, the process S228 determines that there is room for a new book, it proceeds to process step S336, where it obtains the download parameters from the host computer. Next, the process S228 sends the public key to the host computer for encryption as shown in process step S338.

The process S228 then receives download data that has been encrypted and compressed as shown in process step S340 and then proceeds to decision step S342, where it queries if downloading is complete. If not, the process continues back to process step S340, where it continues to receive download data. If at decision step S342, the process S228 determines that downloading is complete, the process S228 proceeds to process step S342, where it equips the data with a private key and stores the data in memory. The process S228 then terminates.

Beginning from a start state, as shown in Figure 6D, the process S232 proceeds to decision step S350, where it queries if the "flip pages" icon 124 (Figure 3B) has been selected. If so, the process S232 proceeds to process step S352, where it decompresses partial pages for rapid display. If the "flip pages" icon 124 has not been selected, the process S232 continues to monitor the "flip pages" icon 124 by returning to decision step S350. Proceeding from process step S352, the process S232 displays the partial page, as shown in process step S354. Next, the process S232 proceeds to process step S356, where it indexes forward or backward queries in accordance to the pages selected. The process S232 then proceeds to decision step S358, where it queries if the "flip pages" icon 124 is selected. If so, the process S232 proceeds back to process step S352. If not, the process S232 proceeds to process step S360, where it decompresses the full page and displays the text. The process S232 then proceeds to decision step S362, where it queries if the exit icon has been selected. If not, the process S232 proceeds back to decision step S358, where it continues to monitor the foot key. If at the decision step S362 the exit icon has been selected, the process S232 terminates.

Beginning a start state, as shown in Figure 6E, the process S236 proceeds to decision step S370, where it queries if the jacket information is stored. If not, the process S236 proceeds to process step S372, where it displays a regret message and the process then terminates. If the jacket information is determined to be stored, the process S236 proceeds to process step S374, where it decompresses and displays the cover of the book selected. The process S236 then proceeds to decision step S376, where it queries if the display icon associated with the display of the cover of the book has been selected. If so, the process S236 proceeds to process step S380, where it displays alternate jacket pages, and then process S236 to decision step S382. If the cycle display icon has not been selected, the process S236 proceeds directly to decision step S382. At decision step S382, the process S236 queries if the exit icon has been selected. If not, the process S236 returns to decision step S736, where it continues to monitor if the cycle icon has been selected. If the exit icon has been selected, the process S236 terminates.

As shown in Figure 6F, the process S240 begins from a start state and proceeds to process step S390, where it displays the change book display page (see Figure 4G). The process S240 then proceeds to decision step S392, where it queries if a new book has been selected. If so, the process S240 proceeds to process step S394, where a new book is selected, and then returns to process step S390, where it displays the change book screen. If a new book has not been selected, the process S240 proceeds to decision step S396, where it queries if a purged book icon 192a, 192b, and 192c, has been selected. If so, the process S240 purges the book selected, as shown in process step S398, and then proceeds to process step S390. If the purged book icon (Figure 14A) has not been selected, the process S240 proceeds to decision step S400, where it queries if "book segmenting" which purges selected segments of a book is selected. If so, the process purges the selected segment of the book, as shown in process step S402. The process S240 then proceeds back to process step S390. If book segmenting has not been selected to process the queries, the process S240 queries if the exit icon has been selected, as shown in decision step S404. If not, the process S240 proceeds back to decision step S392. If the exit icon has been selected, the process S240 terminates.

The process S244 begins from a start state as shown in Figure 6G and then proceeds to process step S410, where it underlines the first sentence on the page (see Figure 4B). The process S244 then proceeds to decision step S412, where it queries if the underlined icon has been selected. If so, the process S244 proceeds to decision step S414, where it moves the cursor to the next sentence and then underlines the next sentence. The process S244 proceeds back to decision step S412. If the underlined icon has not been selected, the process S244 proceeds to decision step S416, where it queries if the exit icon has been selected. If not, the process S244 returns to decision step S412. If the exit icon has been selected, the process S244 terminates.

Beginning from a start state as shown in Figure 6H, the process S248 proceeds to process step S420, where it displays the font size icons. The process S248 proceeds to decision step S422, where it queries if a new size has been selected. The process S248 then proceeds to process step S426, where it changes the font to the new size. The process S248 then reformats the page and displays accordingly. Then it proceeds back to decision step S422. If a new font size has not been selected, the process S248 queries if the exit icon has been selected. If not, it proceeds back to process step S420, where it displays the font size icons. If the exit icon has been selected, the process S248 terminates.

Through the use of the present invention, a publication "virtual bookstore" that allows for an effective manner of examining the contents according to individual interests, and selecting the material to download may be maintained. In addition, a portable display system that is compatible with the virtual bookstore, and the corresponding security and communication features is provided. Furthermore, a user interface in the portable viewer that facilitates the selection, navigation and manipulation of the published works as they are read is provided.

As a result, a system for retaining a library of publications and for selectively loading these publications into a portable viewer with non-volatile memory storage is provided. In addition, a secure communications system that permits downloading of copyrighted materials without concern for their proliferation through present on-line services is also provided.

The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims rather than the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

CLAIMS

What is claimed is:

1. A system for distributing textual information, comprising:

a host computer having a host memory for storing a plurality of units of textual information;

a first modem coupled to the host computer for transmitting textual information stored in the host memory over a transmission medium;

a portable electronic book for retrieving and displaying textual information, comprising:

a housing including a display screen that displays textual information on display pages, the display screen also displays a plurality of function keys corresponding to functions provided by the electronic book in retrieving and displaying the textual information;

a memory for storing the textual information and information; and

a processor coupled to the memory and display screen for controlling the retrieval and display of the textual information, the processor receiving input from the function keys and for controlling the display of the functions on the display screen;

a second modem coupled to the portable electronic book for receiving textual information stored in the host computer via the transmission medium;

wherein the host memory includes a plurality of code numbers and wherein the memory of the portable electronic book includes a unique code number, the host computer providing the textual information to the portable electronic book upon matching of the unique code number with a code number in the plurality of code numbers stored in the host memory.

2. The system of Claim 1, wherein the host computer and the portable electronic book communicate bi-directionally.

3. The system of Claim 1, wherein the host computer is a World Wide Website.

4. The system of Claim 1, wherein the textual information is encrypted and compressed prior to transmission by the first modem.

5. The system of Claim 4, wherein the encrypted and compressed textual information is decrypted and decompressed by the second modem.

6. The system of Claim 1, wherein the display screen is selected from a group consisting of: a liquid crystal display, a cathode ray tube or an electro-luminescent display.

7. The system of Claim 1, wherein the second modem is a modem located within the portable electronic book.

8. The system of Claim 1, wherein the display screen comprises a pen and a digitizer screen that is overlaid on the display screen.

9. The system of Claim 1, wherein the pen is a stylus pen.

10. A method for distributing textual information, comprising:

providing a host computer having a host memory for storing a plurality of units of textual information;

transmitting textual information stored in the host memory over a transmission medium;

providing a portable electronic book for retrieving and displaying textual information, said portable electronic book comprising:

a housing including a display screen that displays textual information on display pages, the display screen also displays a plurality of function keys corresponding to functions provided by the electronic book in retrieving and displaying the textual information;

a memory for storing the textual information and information; and

a processor coupled to the memory and display screen for controlling the retrieval and display of the textual information, the processor receiving input from the function keys and for controlling the display of the functions on the display screen; and identifying the information retrieved over the transmission medium by a code number which permits the addressing of the memory.

11. The method of Claim 10 further comprising the step of providing bi-directional communication between the host computer and the portable electronic book.

12. The method of Claim 10, further comprising the steps of encrypting and compressing the textual information prior to transmission.

13. The method of Claim 12, further comprising the steps of decrypting and decompressing the textual information upon receipt of the encrypted and compressed textual information by the portable electronic book.

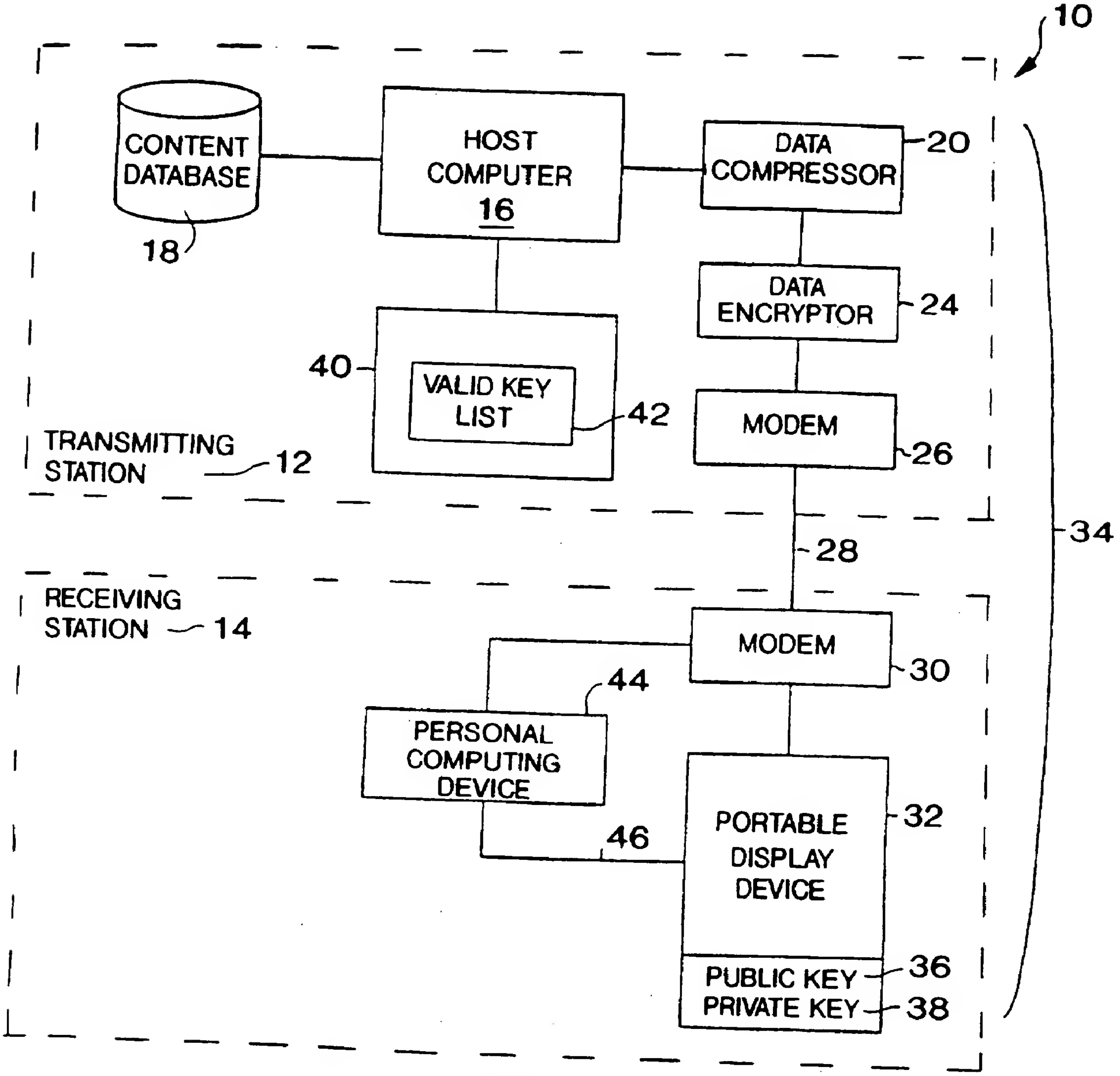

10
CONTENT DATABASE
18
HOST COMPUTER
16
DATA COMPRESSOR
20
DATA ENCRYPTOR
24
40
VALID KEY LIST
42
MODEM
26
TRANSMITTING STATION
12
28
34
RECEIVING STATION
14
MODEM
30
44
PERSONAL COMPUTING DEVICE
46
PORTABLE DISPLAY DEVICE
32
PUBLIC KEY
36
PRIVATE KEY
38

FIG. 1

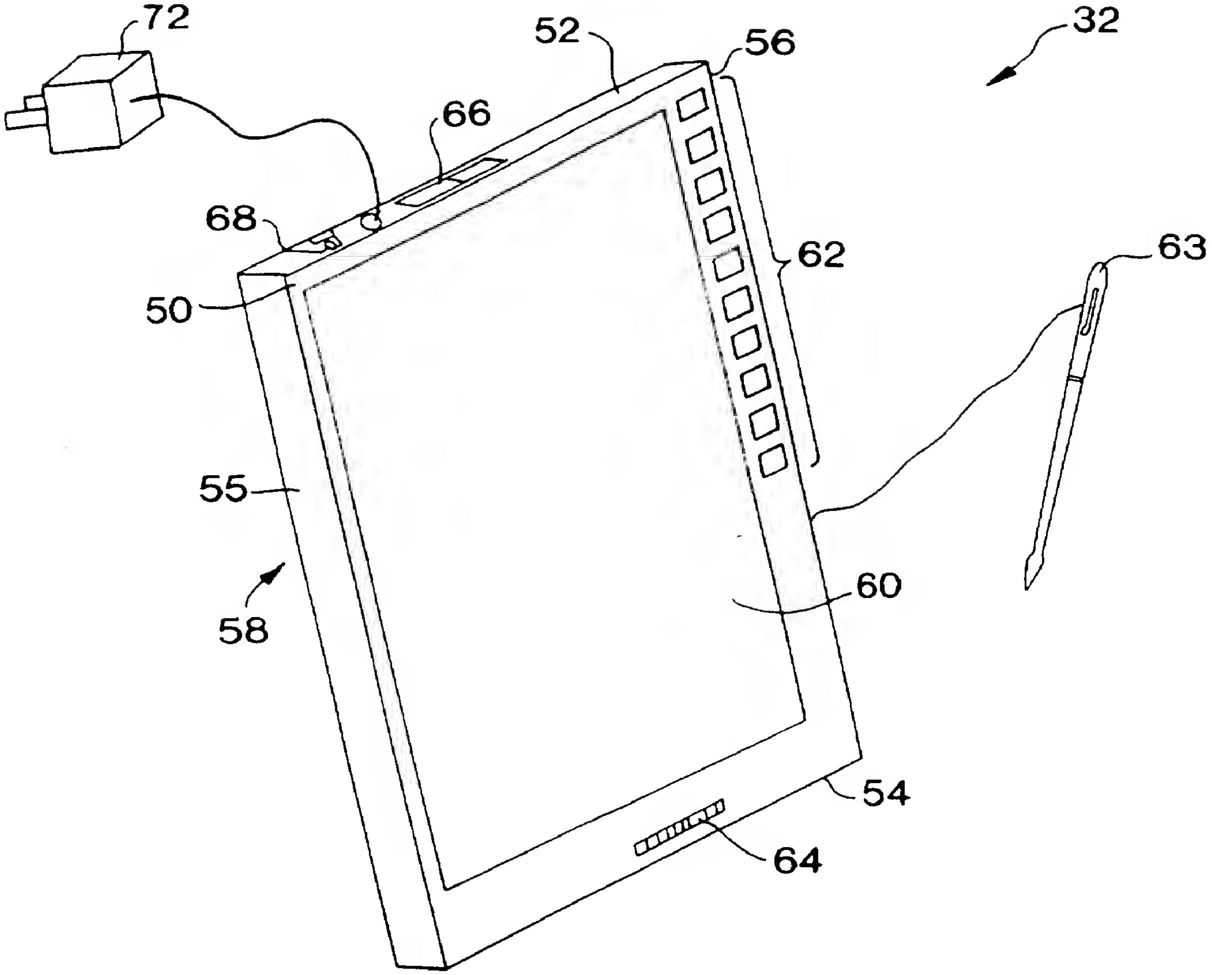

72
52
56
32
66
68
62
63
50
55
58
60
54
64

FIG. 2A

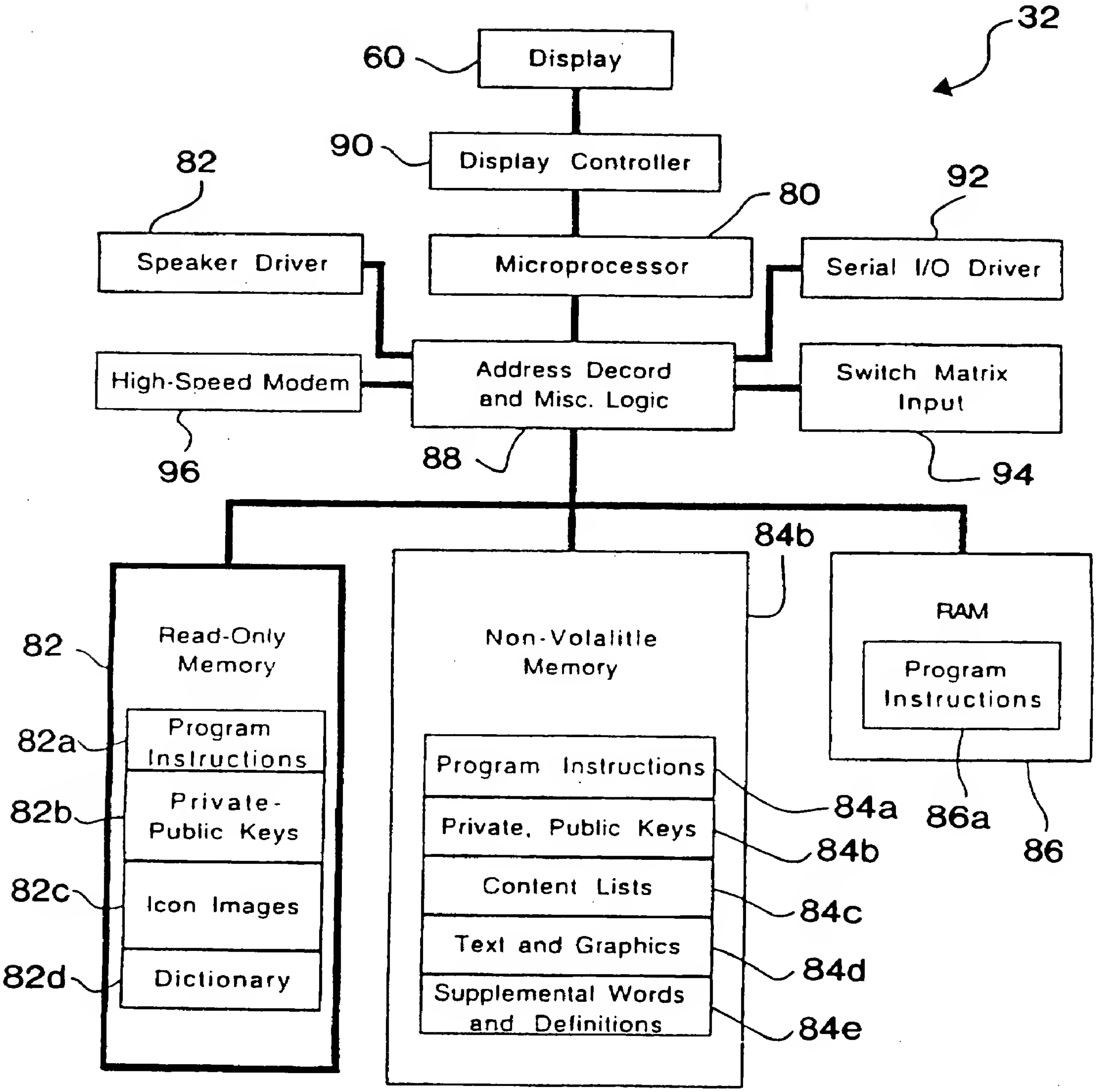
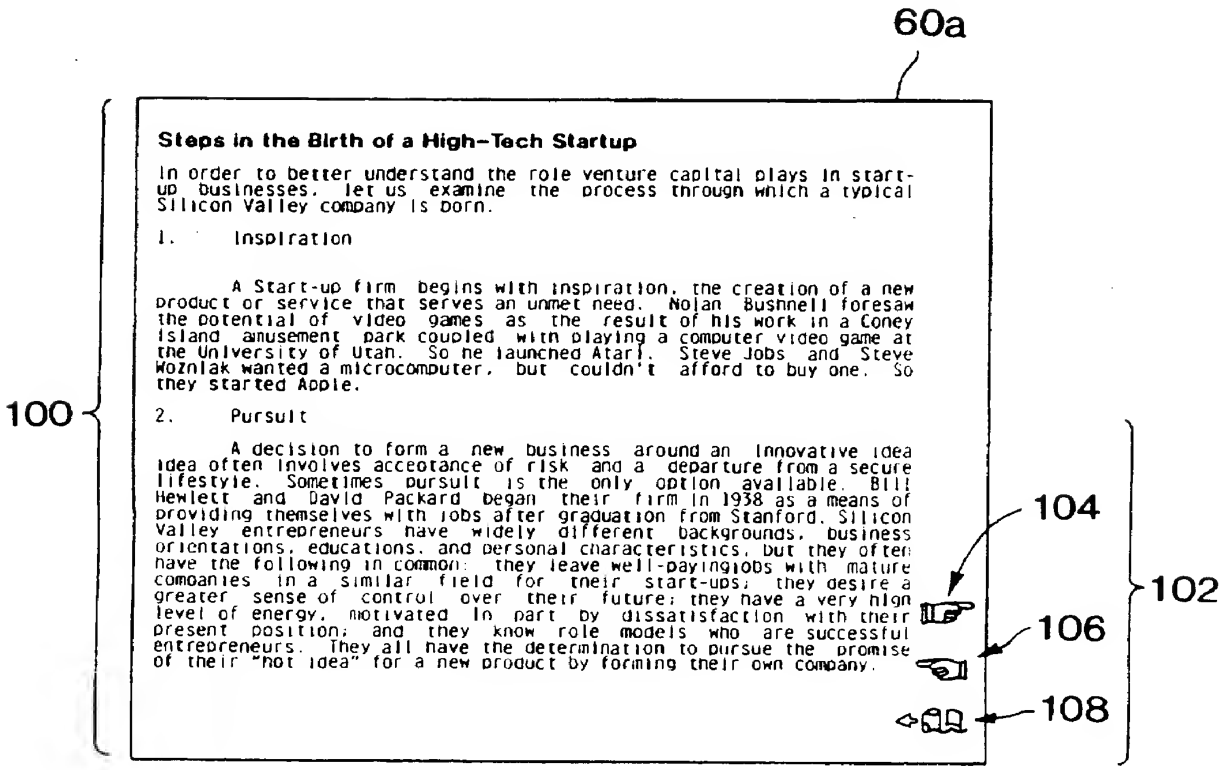

32
60
Display
90
Display Controller
82
Speaker Driver
80
Microprocessor
92
Serial I/O Driver
High-Speed Modem
Address Decord
and Misc. Logic
Switch Matrix
Input
96
88
94
84b
82
Read-Only
Memory
82a
Program
Instructions
82b
Private-
Public Keys
82c
Icon Images
82d
Dictionary
Non-Volatilte
Memory
Program Instructions
Private, Public Keys
Content Lists
Text and Graphics
Supplemental Words
and Definitions
84a
84b
84c
84d
84e
RAM
Program
Instructions
86a
86

FIG. 2B



Steps in the Birth of a High-Tech Startup

In order to better understand the role venture capital plays in start-up businesses, let us examine the process through which a typical Silicon Valley company is born.

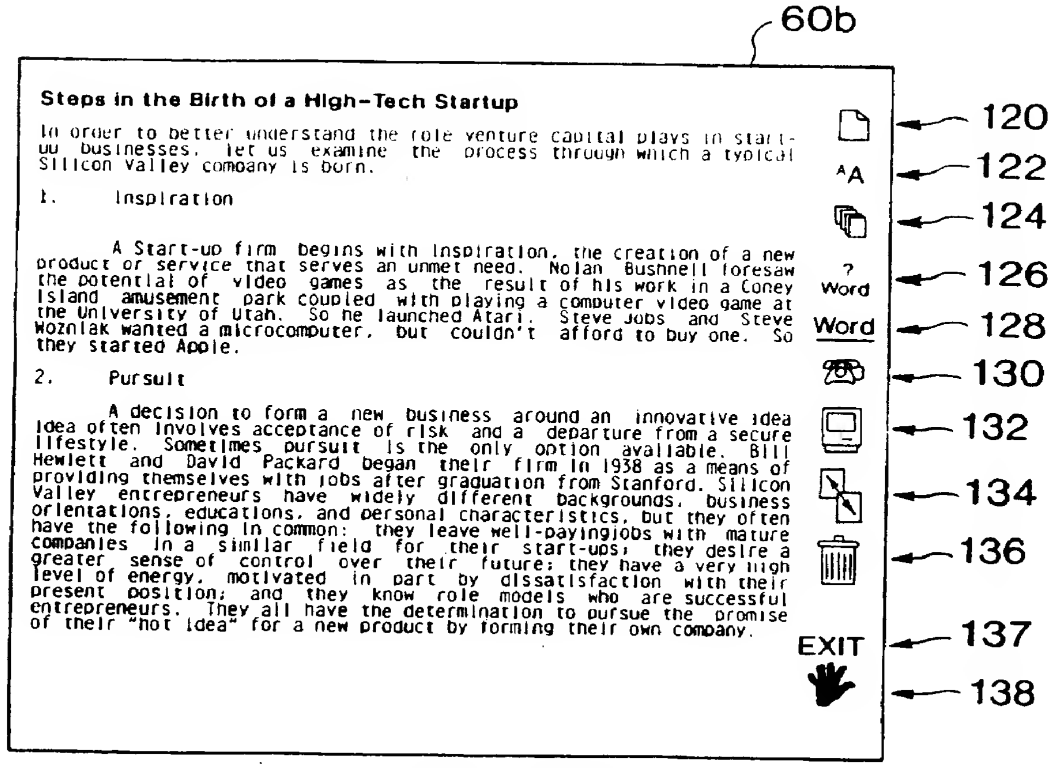
1. Inspiration

A Start-up firm begins with inspiration, the creation of a new product or service that serves an unmet need. Nolan Bushnell foresaw the potential of video games as the result of his work in a Coney Island amusement park coupled with playing a computer video game at the University of Utah. So he launched Atari. Steve Jobs and Steve Wozniak wanted a microcomputer, but couldn't afford to buy one. So they started Apple.

2. Pursuit

A decision to form a new business around an innovative idea idea often involves acceptance of risk and a departure from a secure lifestyle. Sometimes pursuit is the only option available. Bill Hewlett and David Packard began their firm in 1938 as a means of providing themselves with jobs after graduation from Stanford. Silicon Valley entrepreneurs have widely different backgrounds, business orientations, educations, and personal characteristics, but they often have the following in common: they leave well-payingjobs with mature companies in a similar field for their start-ups; they desire a greater sense of control over their future; they have a very high level of energy, motivated in part by dissatisfaction with their present position; and they know role models who are successful entrepreneurs. They all have the determination to pursue the promise of their "hot idea" for a new product by forming their own company.

FIG. 3A



Steps in the Birth of a High-Tech Startup

In order to better understand the role venture capital plays in start-up businesses, let us examine the process through which a typical Silicon Valley company is born.

1. Inspiration

A Start-up firm begins with inspiration, the creation of a new product or service that serves an unmet need. Nolan Bushnell foresaw the potential of video games as the result of his work in a Coney Island amusement park coupled with playing a computer video game at the University of Utah. So he launched Atari. Steve Jobs and Steve Wozniak wanted a microcomputer, but couldn't afford to buy one. So they started Apple.

2. Pursuit

A decision to form a new business around an innovative idea idea often involves acceptance of risk and a departure from a secure lifestyle. Sometimes pursuit is the only option available. Bill Hewlett and David Packard began their firm in 1938 as a means of providing themselves with jobs after graduation from Stanford. Silicon Valley entrepreneurs have widely different backgrounds, business orientations, educations, and personal characteristics, but they often have the following in common: they leave well-payingjobs with mature companies in a similar field for their start-ups; they desire a greater sense of control over their future; they have a very high level of energy, motivated in part by dissatisfaction with their present position; and they know role models who are successful entrepreneurs. They all have the determination to pursue the promise of their "hot idea" for a new product by forming their own company.

FIG. 3B

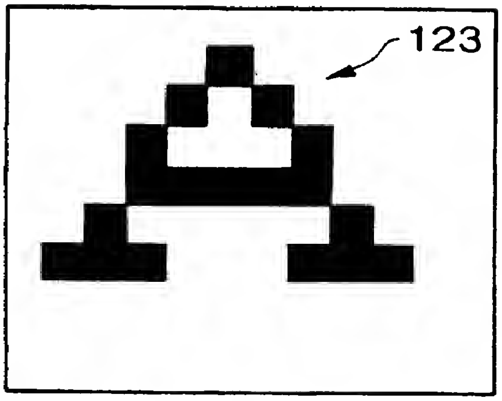
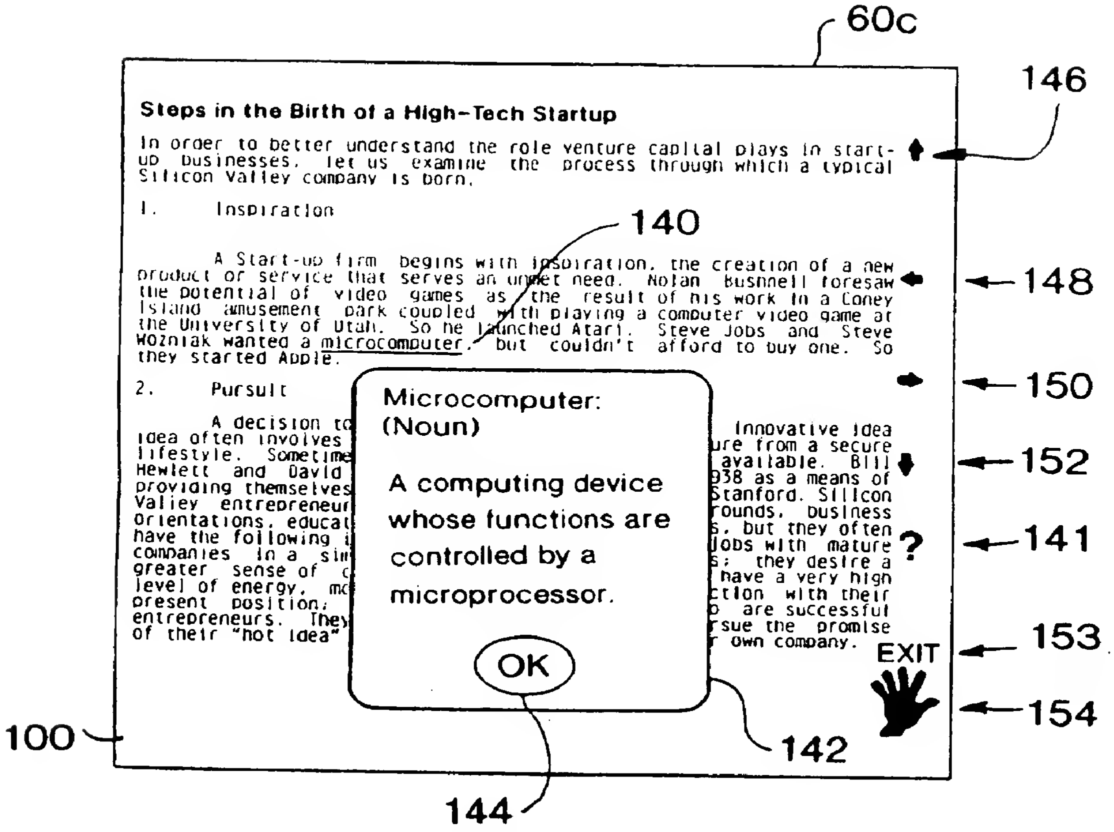


FIG. 3C



Steps in the Birth of a High-Tech Startup

In order to better understand the role venture capital plays in start-up businesses, let us examine the process through which a typical Silicon Valley company is born.

1. Inspiration

A Start-up firm begins with inspiration, the creation of a new product or service that serves an unmet need. Nolan Busnnell foresaw the potential of video games as the result of his work in a Coney Island amusement park coupled with playing a computer video game at the University of Utah. So he launched Atari. Steve Jobs and Steve Wozniak wanted a microcomputer, but couldn't afford to buy one. So they started Apple.

2. Pursuit

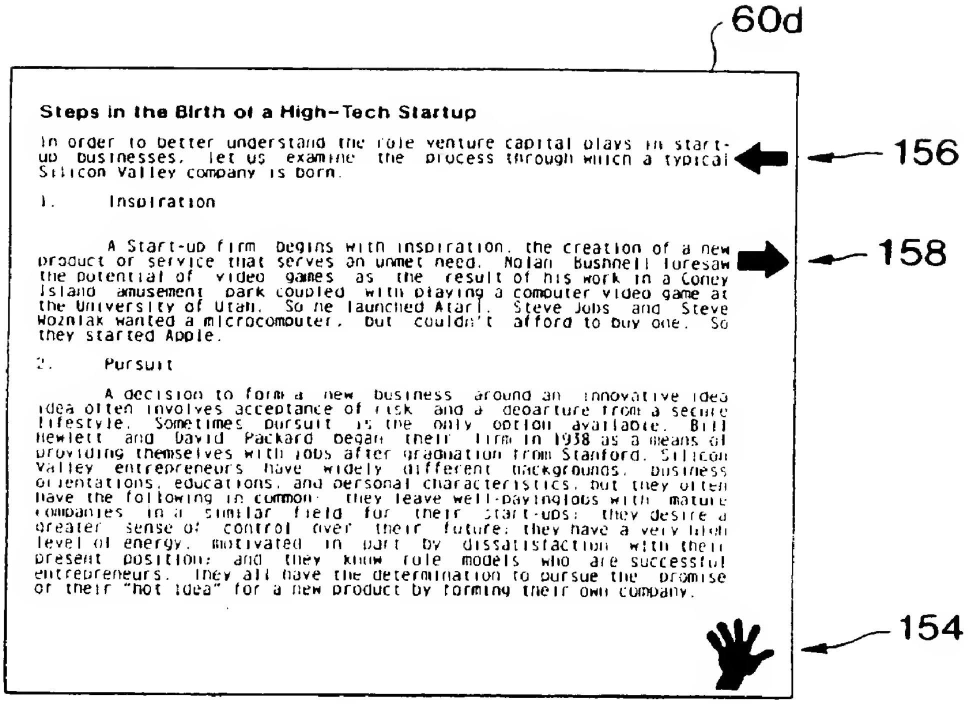
A decision to
idea often involves
lifestyle. Sometime
Hewlett and David
providing themselves
Valley entrepreneur
orientations, educat
have the following i
companies in a sim
greater sense of c
level of energy, mc
present position;
entrepreneurs. They
of their "hot idea"

Innovative idea
ure from a secure
available. Bill
938 as a means of
Stanford. Silicon
ounds, business
s, but they often
jobs with mature
s; they desire a
have a very high
ction with their
o are successful
rsue the promise
r own company.

Microcomputer:
(Noun)

A computing device whose functions are controlled by a microprocessor.

FIG. 4A



Steps in the Birth of a High-Tech Startup

In order to better understand the role venture capital plays in start-up businesses, let us examine the process through which a typical Silicon Valley company is born.

1. Inspiration

A Start-up firm begins with inspiration, the creation of a new product or service that serves an unmet need. Nolan Bushnell foresaw the potential of video games as the result of his work in a Coney Island amusement park coupled with playing a computer video game at the University of Utah. So he launched Atari. Steve Jobs and Steve Wozniak wanted a microcomputer, but couldn't afford to buy one. So they started Apple.

2. Pursuit

A decision to form a new business around an innovative idea idea often involves acceptance of risk and a departure from a secure lifestyle. Sometimes pursuit is the only option available. Bill Hewlett and David Packard began their firm in 1938 as a means of providing themselves with jobs after graduation from Stanford. Silicon Valley entrepreneurs have widely different backgrounds, business orientations, educations, and personal characteristics, but they often have the following in common: they leave well-payingjobs with mature companies in a similar field for their start-ups; they desire a greater sense of control over their future; they have a very high level of energy, motivated in part by dissatisfaction with their present position; and they know role models who are successful entrepreneurs. They all have the determination to pursue the promise of their "hot idea" for a new product by forming their own company.

FIG. 4B

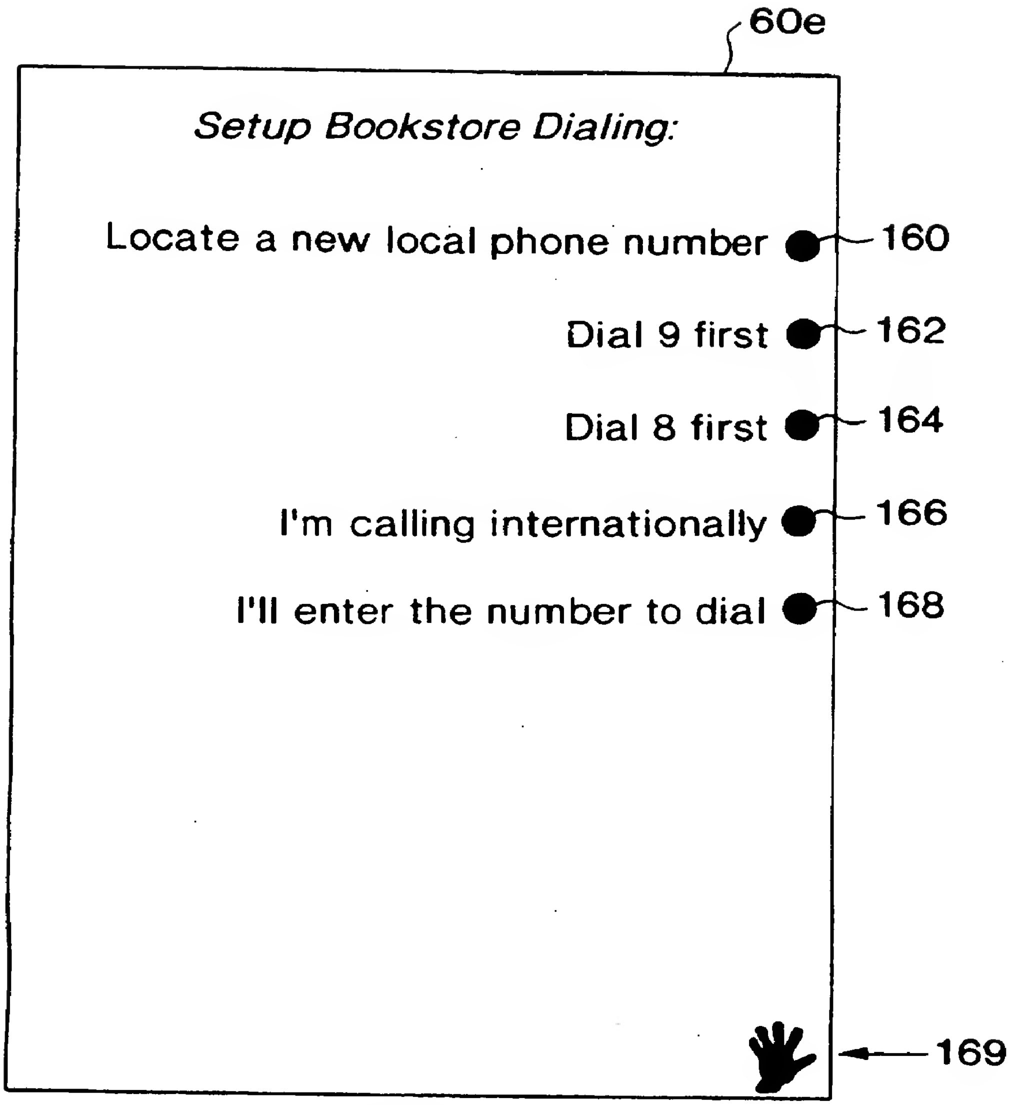

60e
Setup Bookstore Dialing:
Locate a new local phone number
160
Dial 9 first
162
Dial 8 first
164
I'm calling internationally
166
I'll enter the number to dial
168
169

FIG. 4C

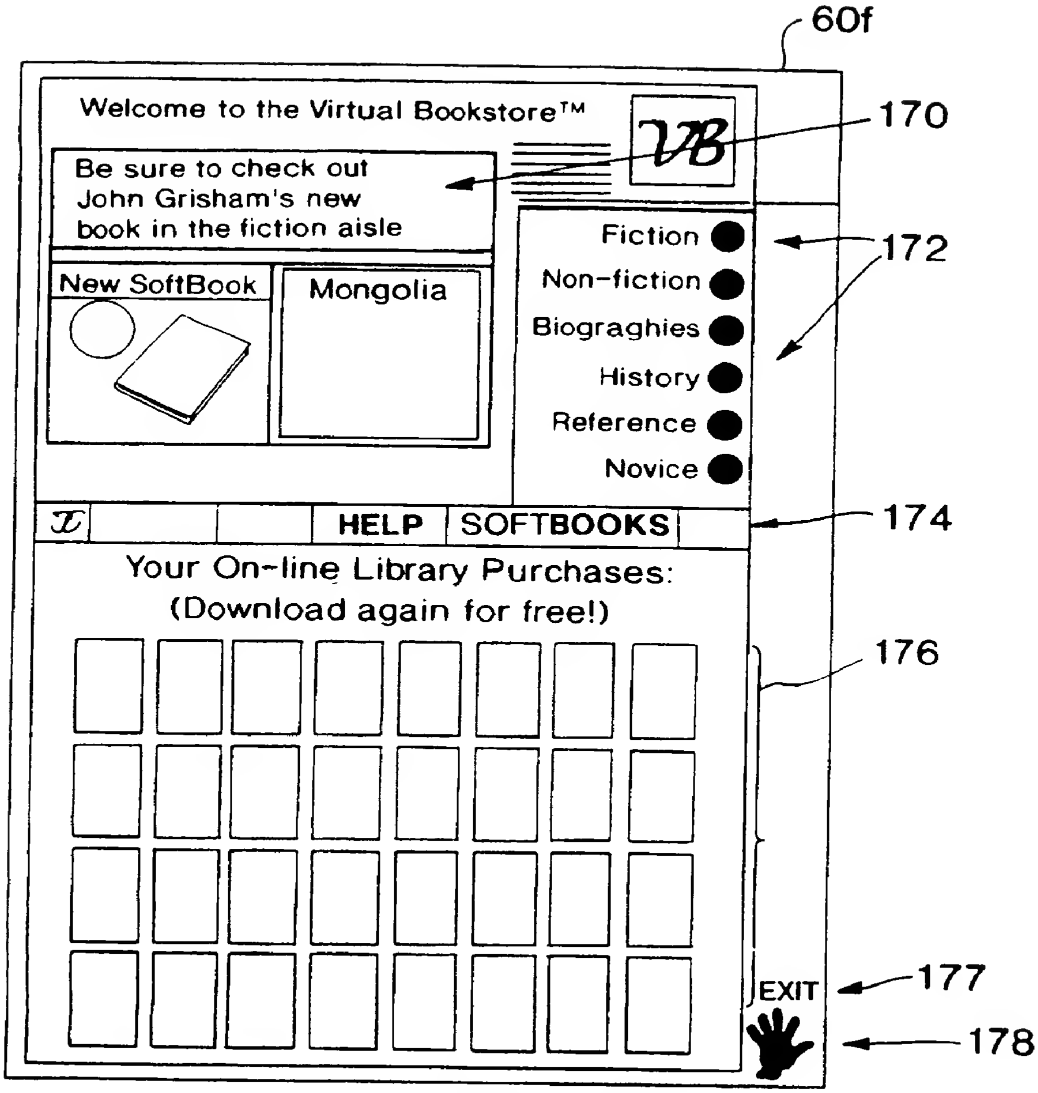

60f
Welcome to the Virtual Bookstore™
VB
170
Be sure to check out John Grisham's new book in the fiction aisle
New SoftBook
Mongolia
Fiction
Non-fiction
Biograghies
History
Reference
Novice
172
HELP
SOFTBOOKS
174
Your On-line Library Purchases:
(Download again for free!)
176
EXIT
177
178

FIG. 4D

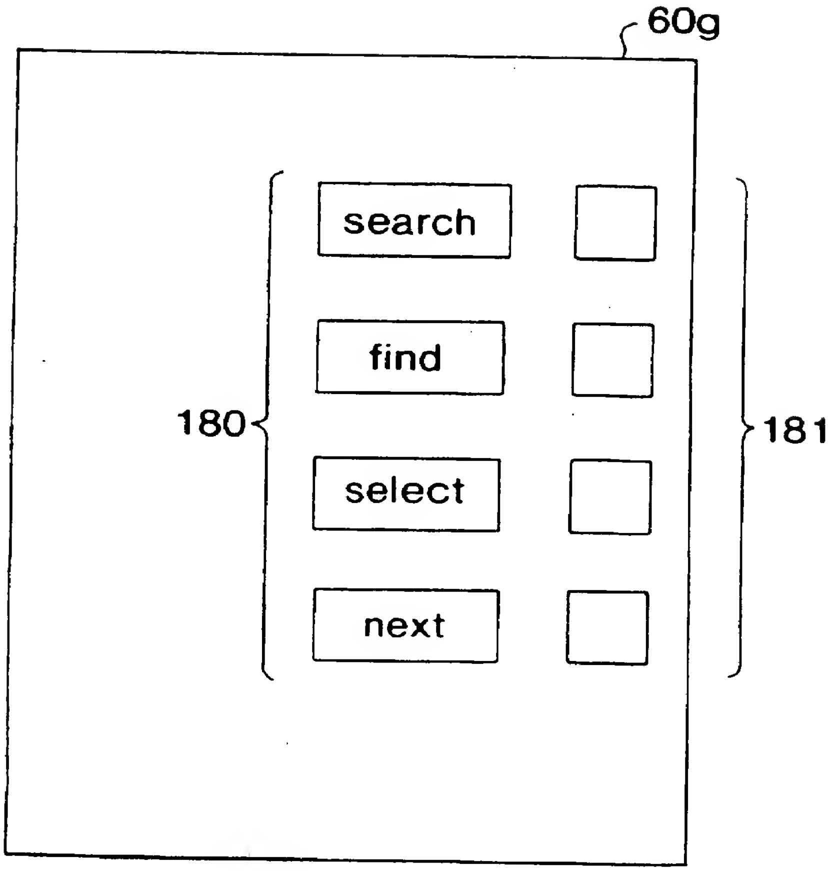

60g
search
find
select
next
180
181

FIG. 4E

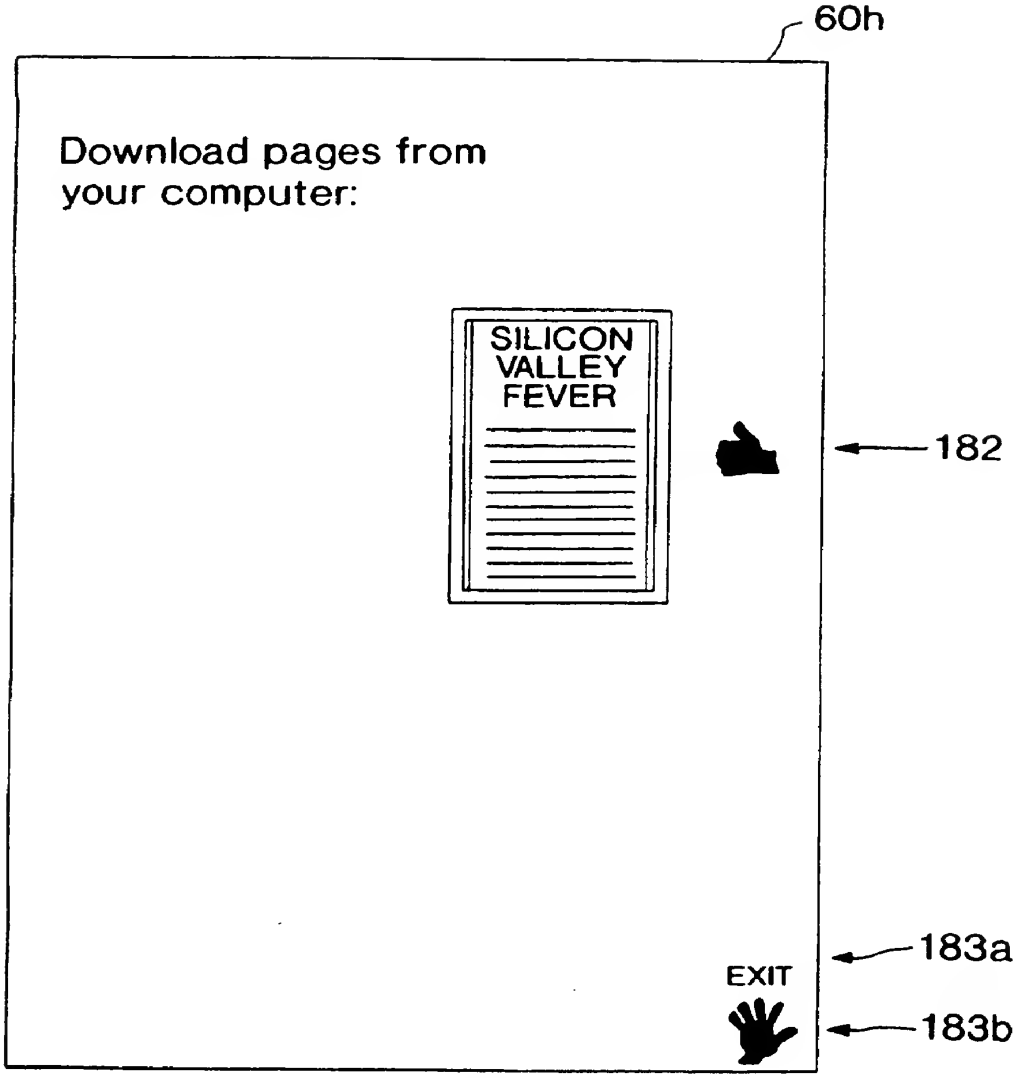

60h
Download pages from
your computer:
SILICON
VALLEY
FEVER
182
183a
EXIT
183b

FIG. 4F

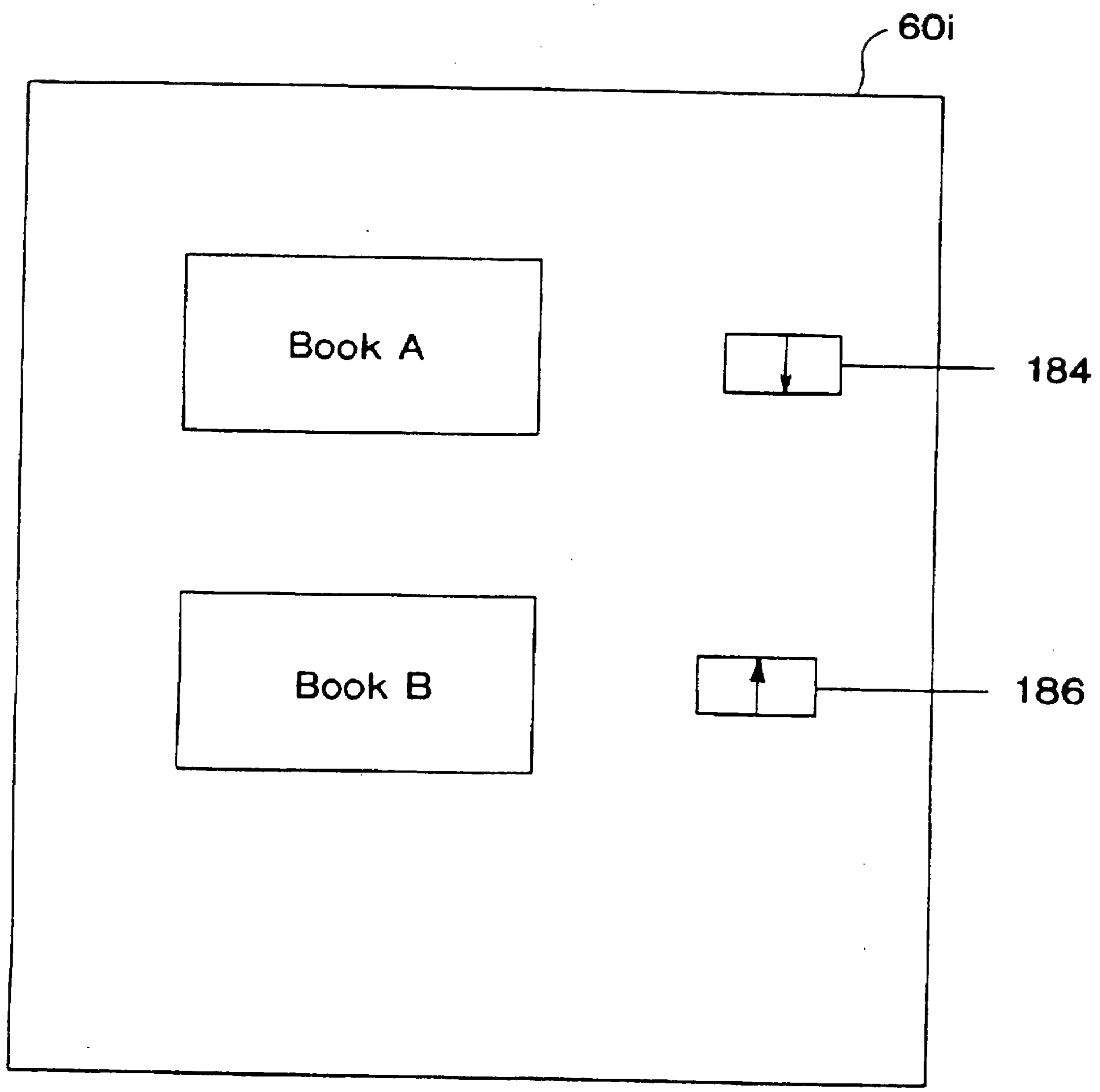

60i
Book A
184
Book B
186

FIG. 4G

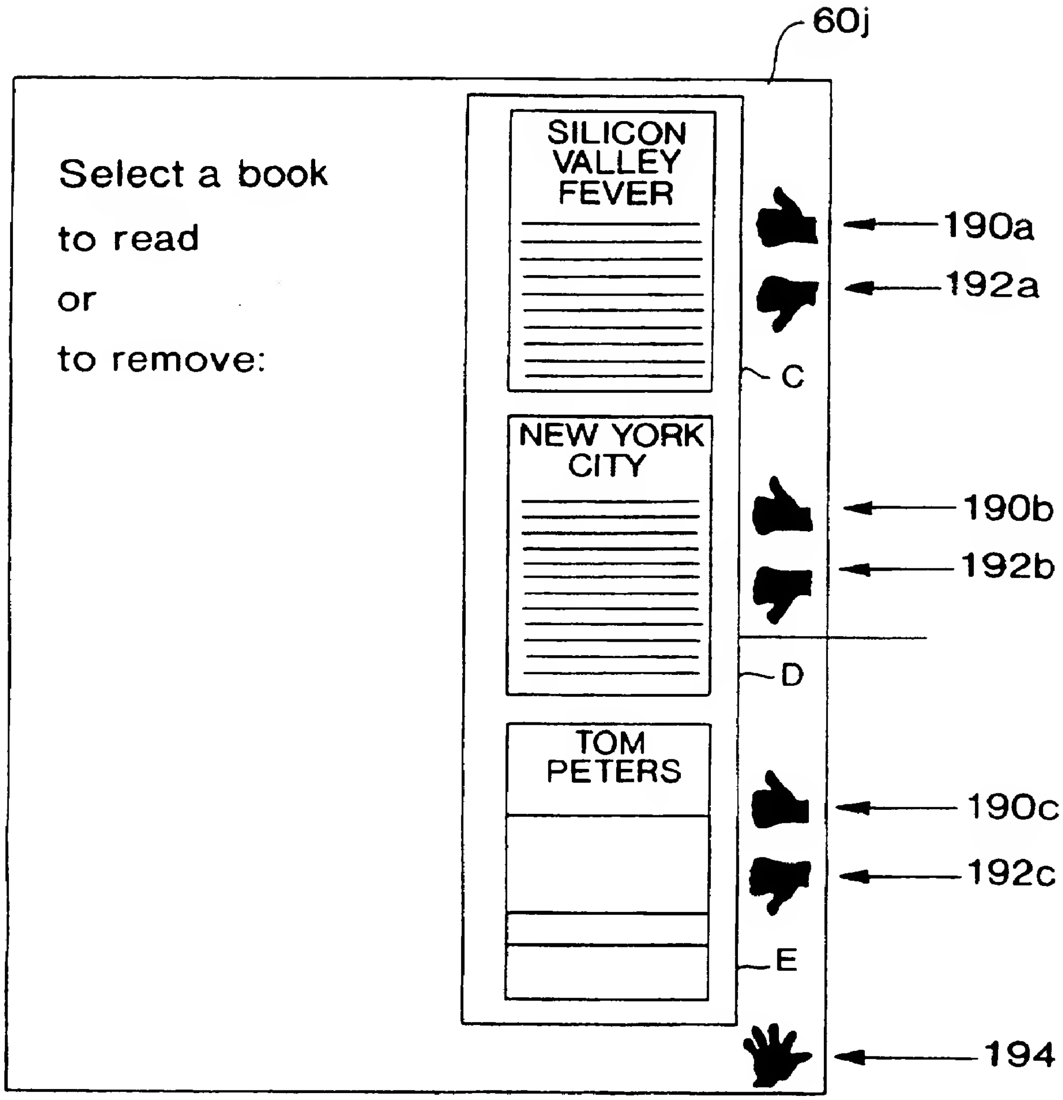

60j
Select a book
to read
or
to remove:
SILICON VALLEY FEVER
NEW YORK CITY
TOM PETERS
C
D
E
190a
192a
190b
192b
190c
192c
194

FIG. 4H

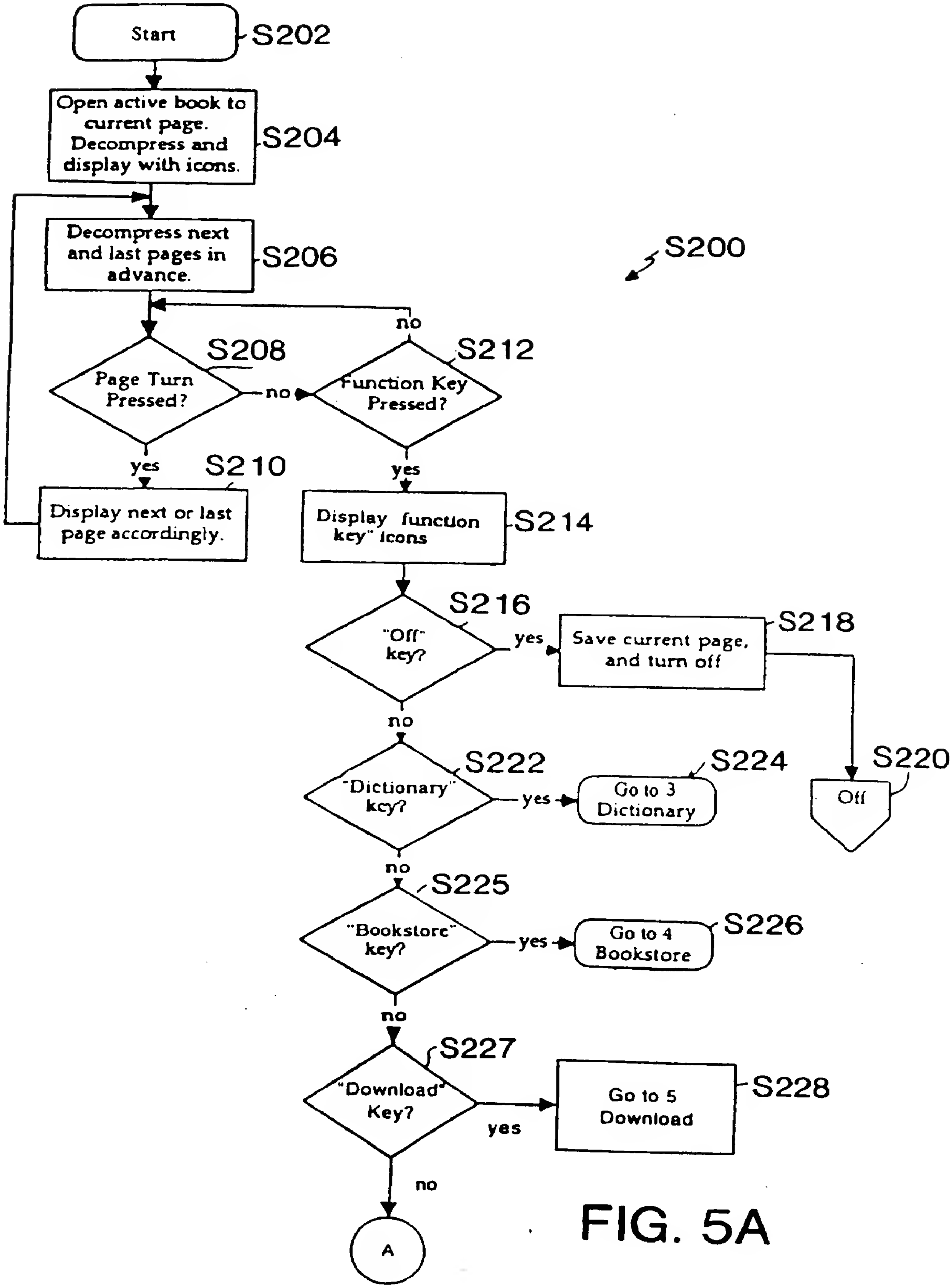

Start
S202
Open active book to current page. Decompress and display with icons.
S204
Decompress next and last pages in advance.
S206
S200
Page Turn Pressed?
S208
no
yes
Function Key Pressed?
S212
no
yes
S210
Display next or last page accordingly.
Display function key" icons
S214
"Off" key?
S216
yes
Save current page, and turn off
S218
no
"Dictionary" key?
S222
yes
Go to 3 Dictionary
S224
S220
Off
no
S225
"Bookstore" key?
yes
Go to 4 Bookstore
S226
no
S227
"Download" Key?
yes
Go to 5 Download
S228
no
A

FIG. 5A

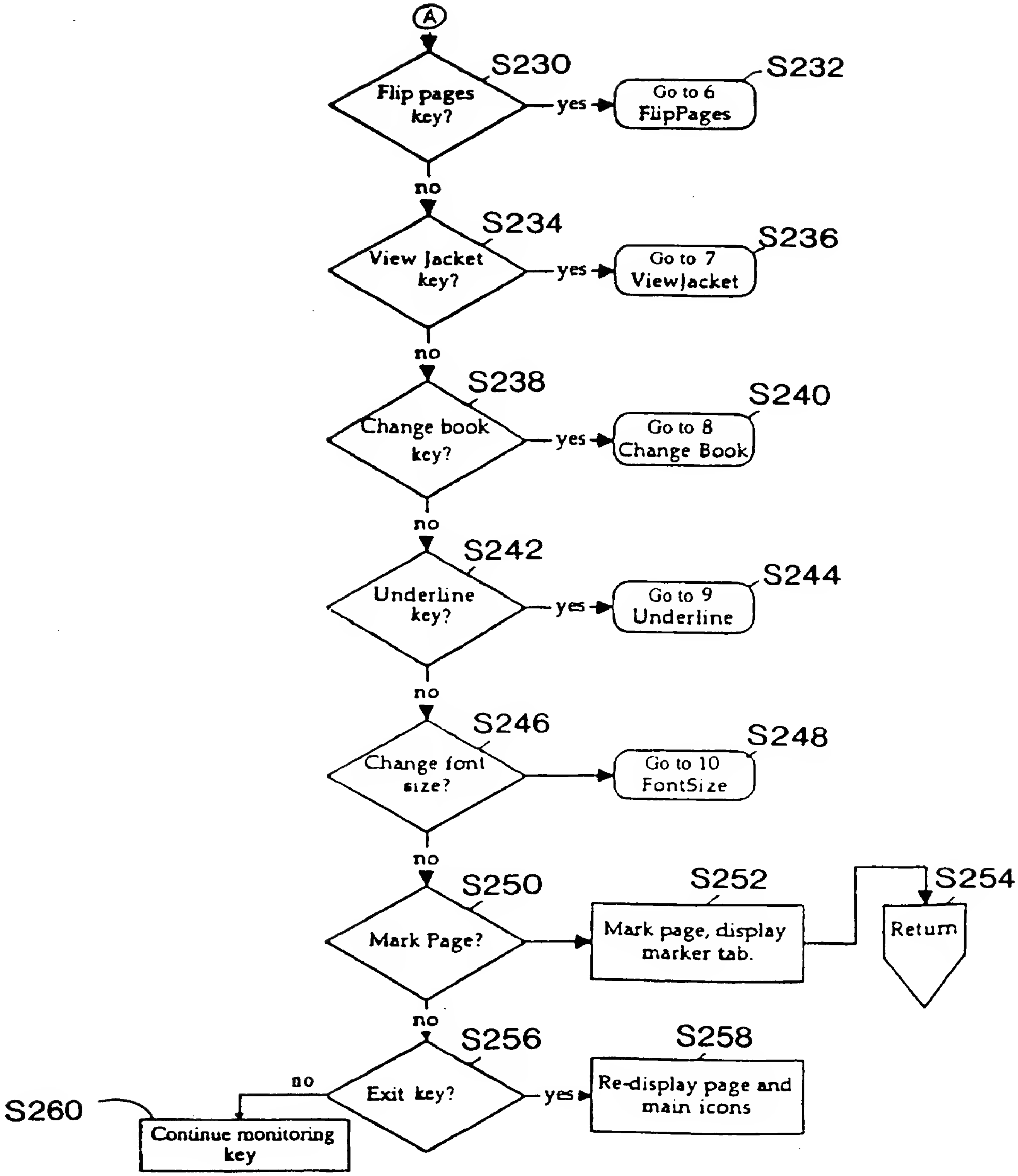
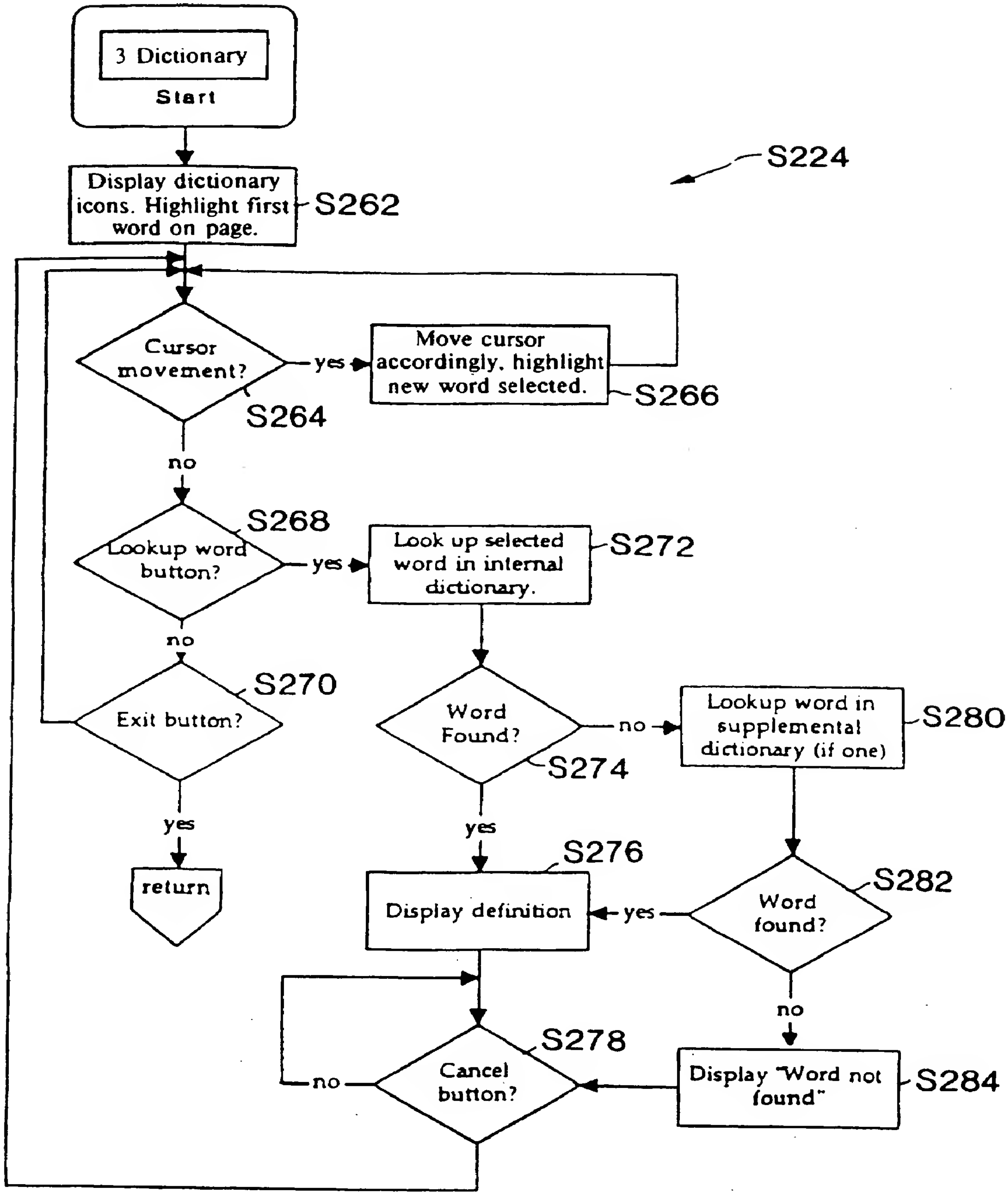

A
S230
Flip pages key?
yes
S232
Go to 6 FlipPages
no
S234
View Jacket key?
yes
S236
Go to 7 ViewJacket
no
S238
Change book key?
yes
S240
Go to 8 Change Book
no
S242
Underline key?
yes
S244
Go to 9 Underline
no
S246
Change font size?
S248
Go to 10 FontSize
no
S250
Mark Page?
S252
Mark page, display marker tab.
S254
Return
no
S256
Exit key?
yes
S258
Re-display page and main icons
no
S260
Continue monitoring key

FIG. 5B



3 Dictionary
Start
S224
Display dictionary icons. Highlight first word on page.
S262
Cursor movement?
yes
Move cursor accordingly, highlight new word selected.
S266
S264
no
S268
Lookup word button?
yes
Look up selected word in internal dictionary.
S272
no
S270
Exit button?
yes
return
Word Found?
no
Lookup word in supplemental dictionary (if one)
S280
S274
yes
S276
Display definition
yes
Word found?
S282
no
S278
Cancel button?
no
Display "Word not found"
S284

FIG. 6A

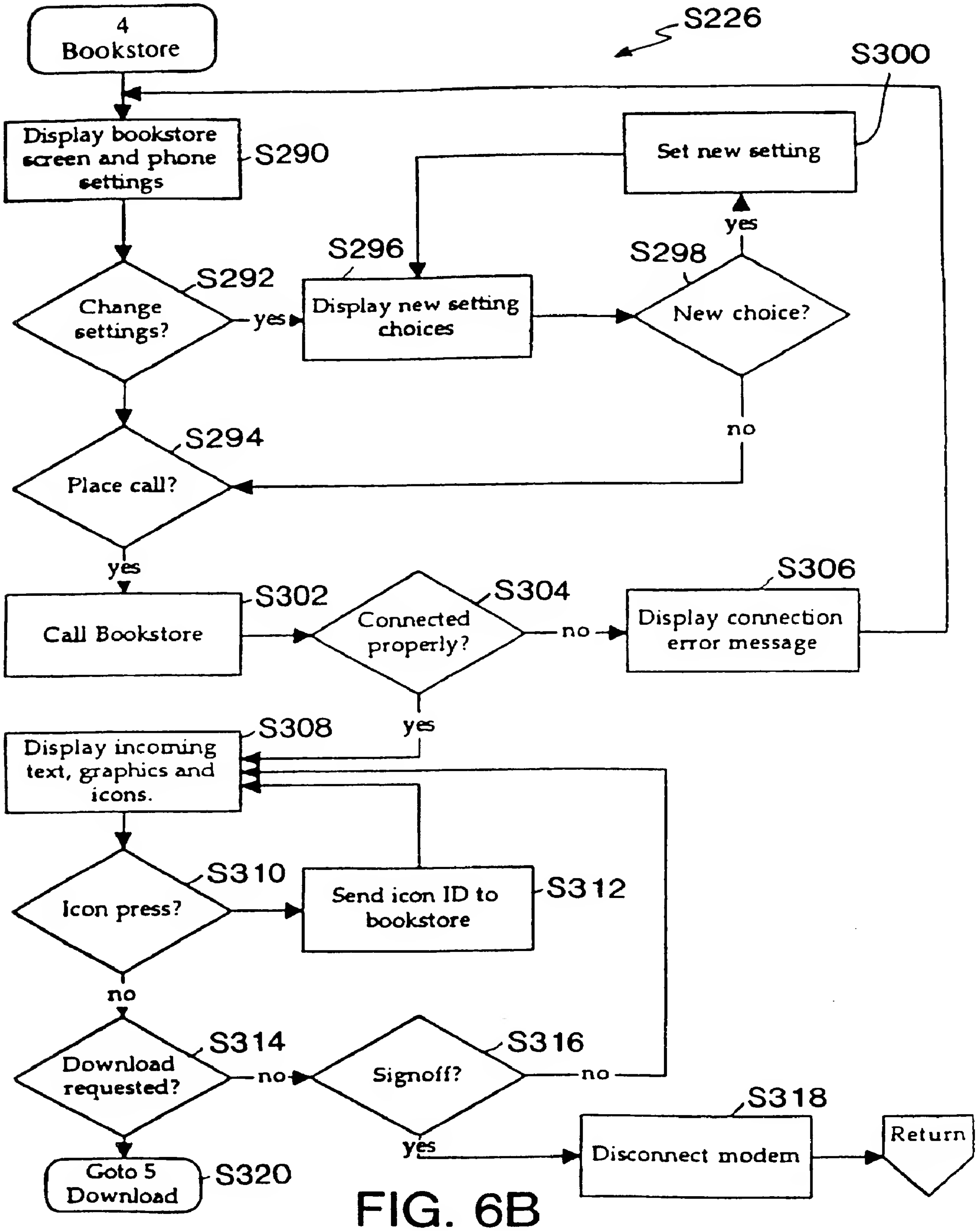

S226
4
Bookstore
S300
Display bookstore screen and phone settings
S290
Set new setting
yes
S296
S298
S292
Change settings?
yes
Display new setting choices
New choice?
no
S294
Place call?
yes
S306
S302
S304
Call Bookstore
Connected properly?
no
Display connection error message
yes
S308
Display incoming text, graphics and icons.
S310
Icon press?
Send icon ID to bookstore
S312
no
S314
S316
Download requested?
no
Signoff?
no
S318
yes
Disconnect modem
Return
Goto 5
Download
S320

FIG. 6B

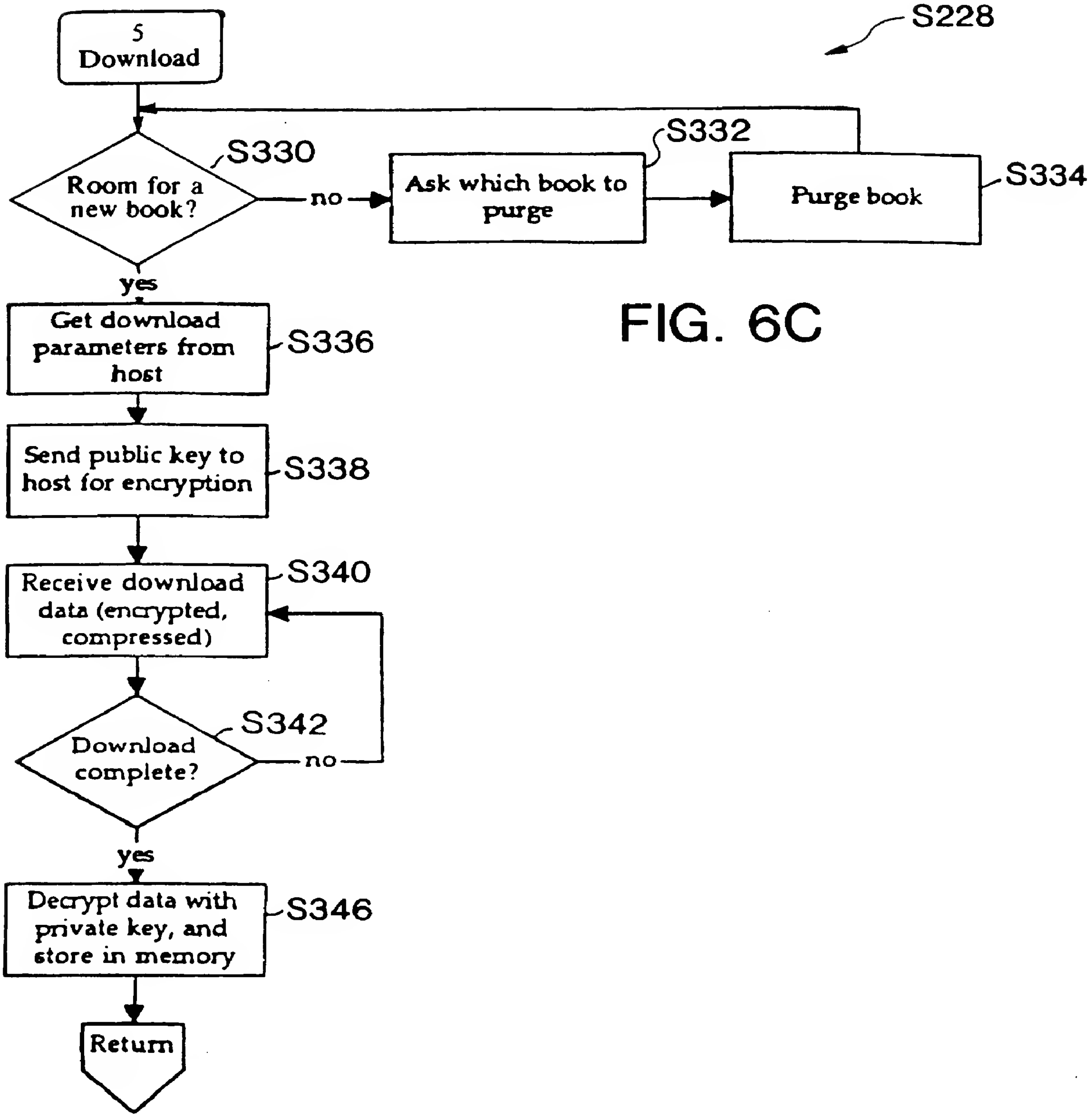

S228
5
Download
Room for a new book?
S330
no
Ask which book to purge
S332
Purge book
S334
yes
Get download parameters from host
S336
Send public key to host for encryption
S338
Receive download data (encrypted, compressed)
S340
Download complete?
S342
no
yes
Decrypt data with private key, and store in memory
S346
Return

FIG. 6C

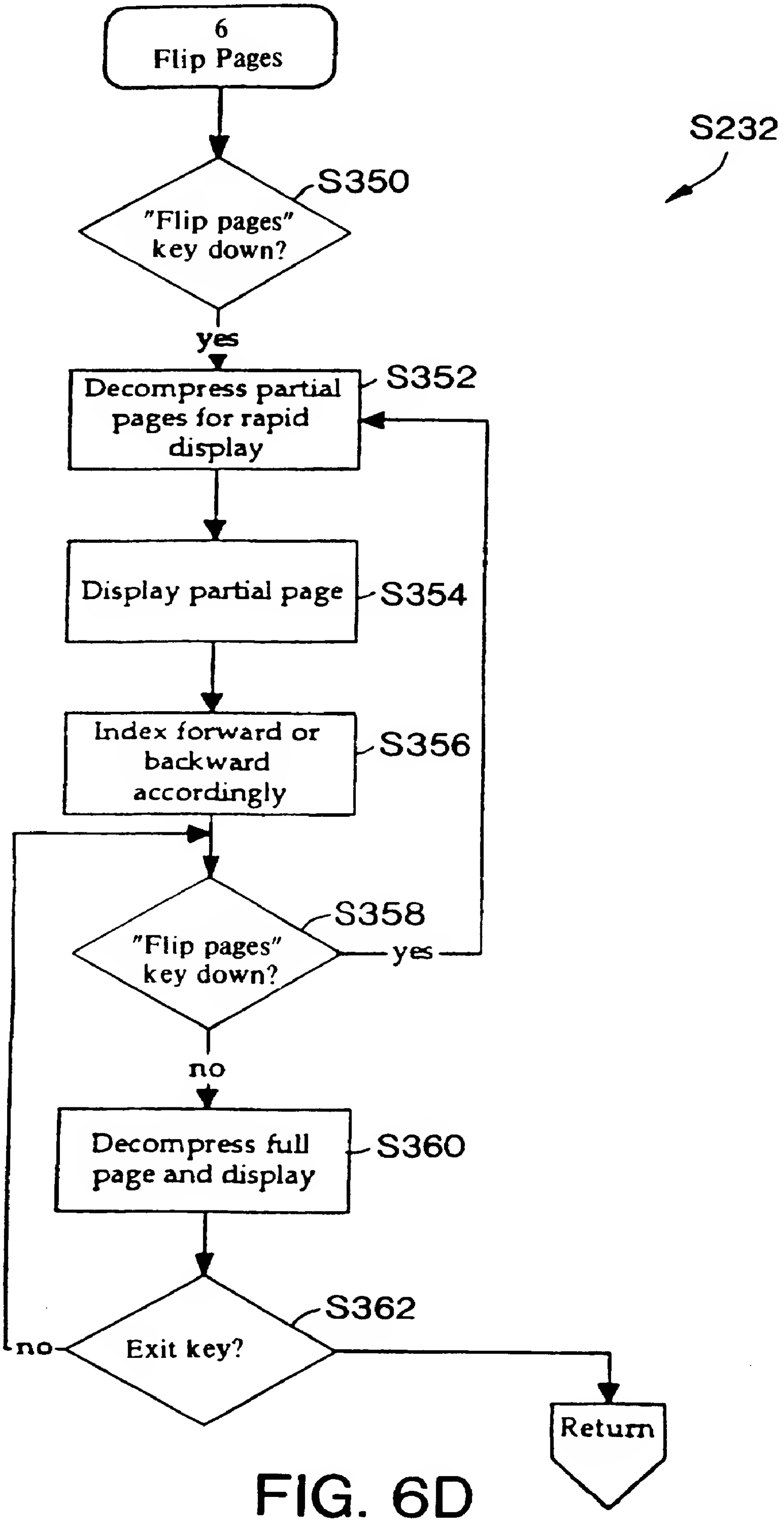

6
Flip Pages
S232
S350
"Flip pages" key down?
yes
Decompress partial pages for rapid display
S352
Display partial page
S354
Index forward or backward accordingly
S356
"Flip pages" key down?
S358
yes
no
Decompress full page and display
S360
Exit key?
S362
no
Return

FIG. 6D

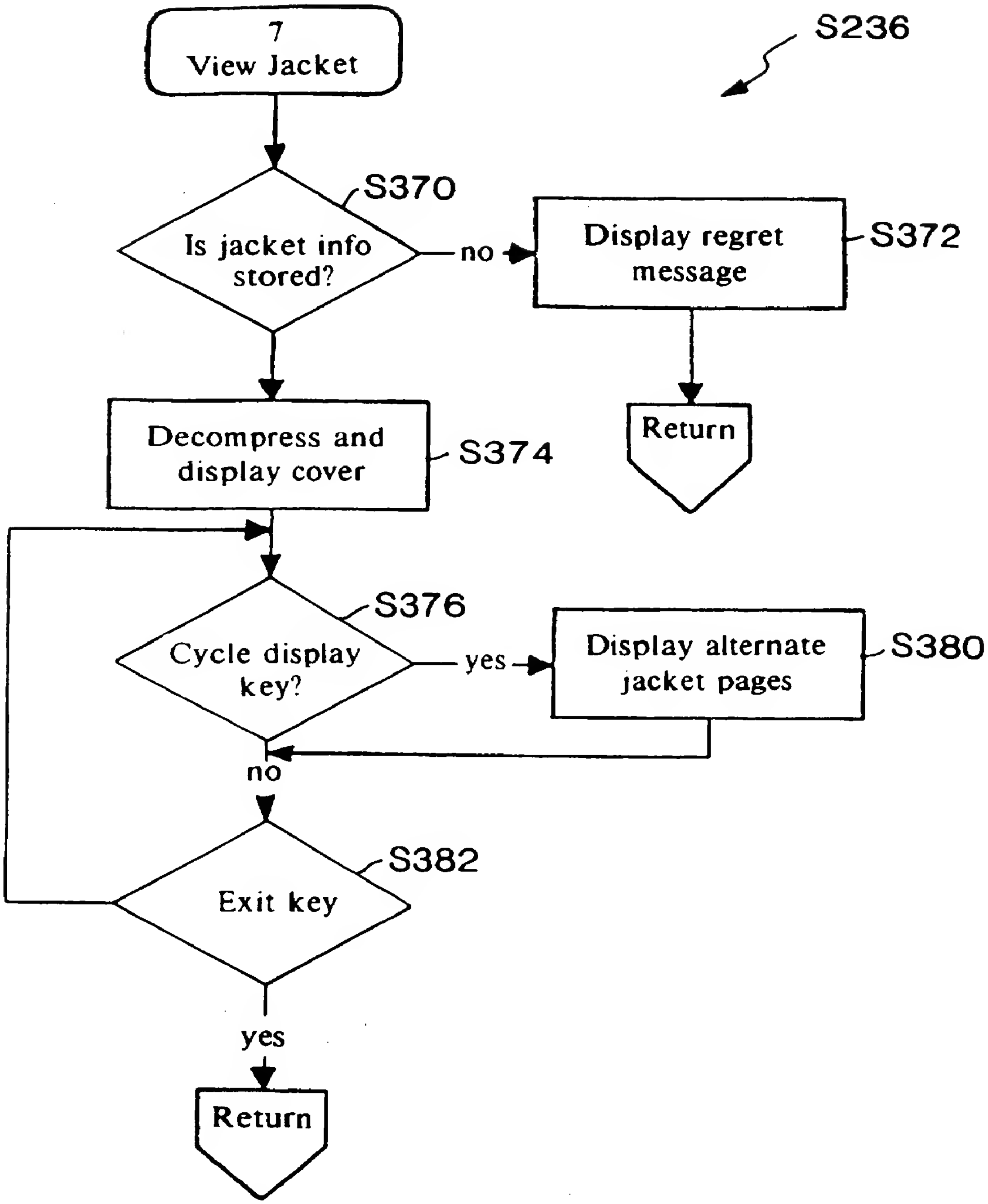

S236
7
View Jacket
S370
Is jacket info stored?
no
Display regret message
S372
Return
Decompress and display cover
S374
S376
Cycle display key?
yes
Display alternate jacket pages
S380
no
S382
Exit key
yes
Return

FIG. 6E

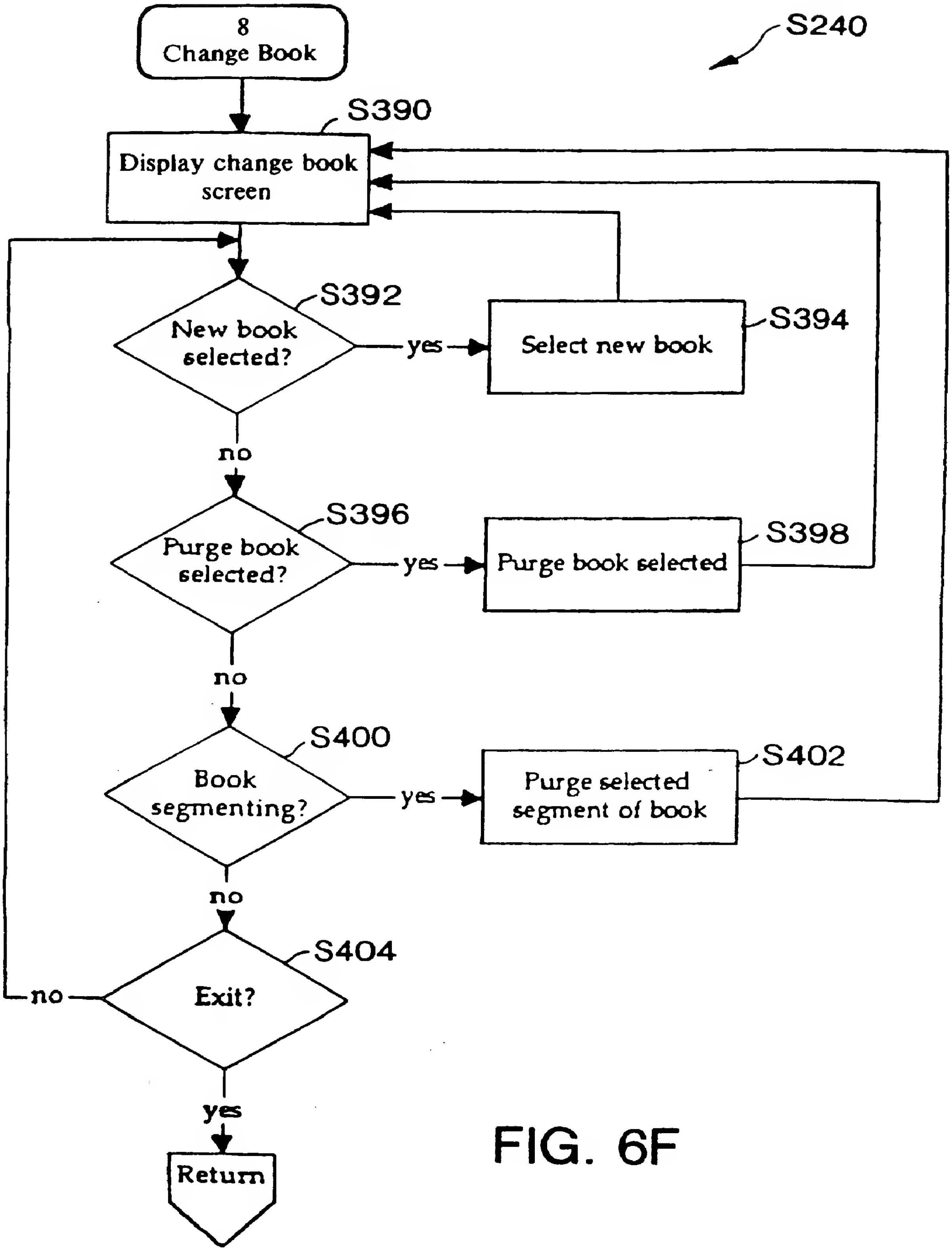

S240
8
Change Book
S390
Display change book screen
S392
New book selected?
yes
Select new book
S394
no
S396
Purge book selected?
yes
Purge book selected
S398
no
S400
Book segmenting?
yes
Purge selected segment of book
S402
no
S404
Exit?
no
yes
Return

FIG. 6F

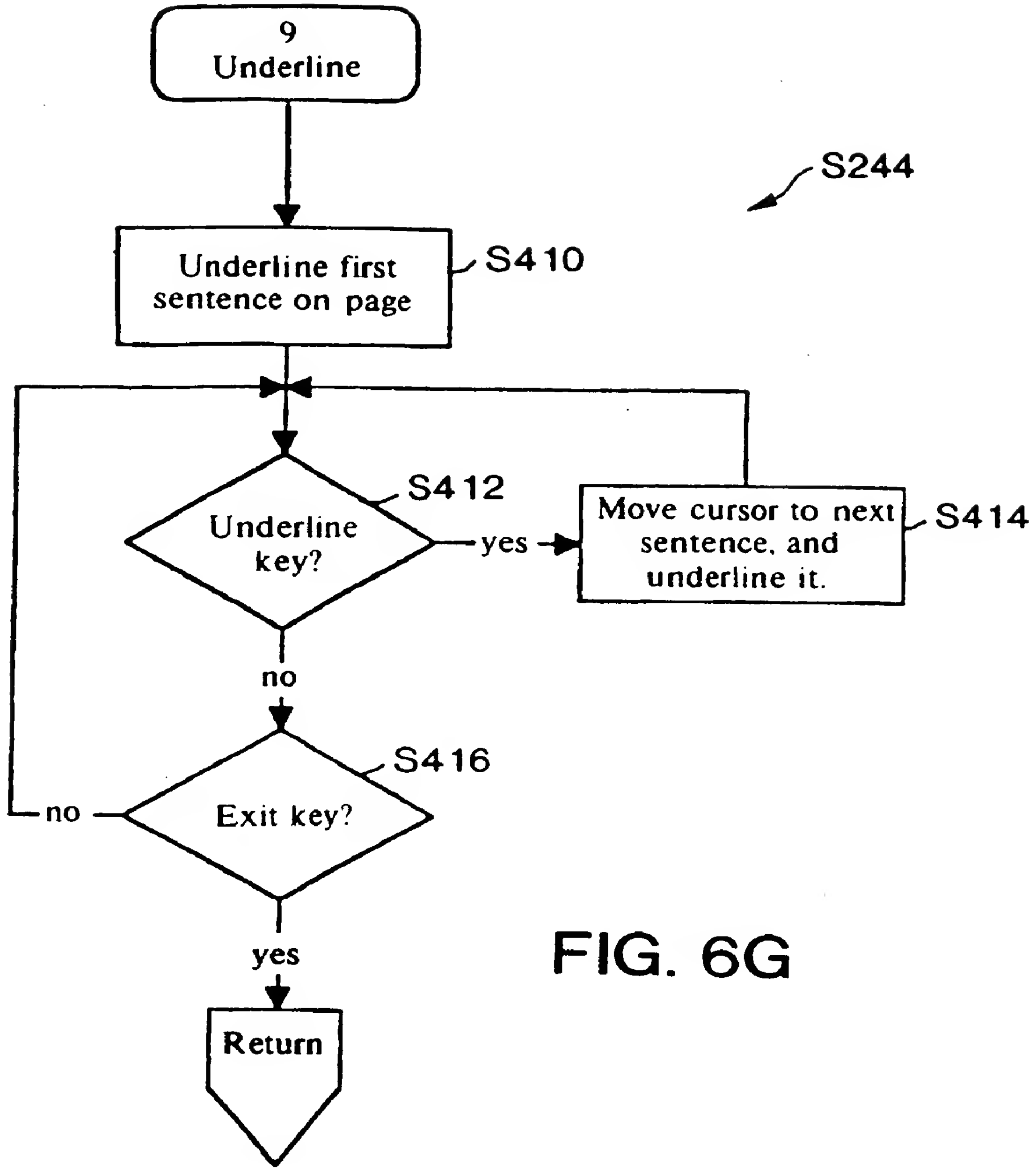

9
Underline
S244
Underline first sentence on page
S410
Underline key?
S412
yes
Move cursor to next sentence, and underline it.
S414
no
Exit key?
S416
no
yes
Return

FIG. 6G

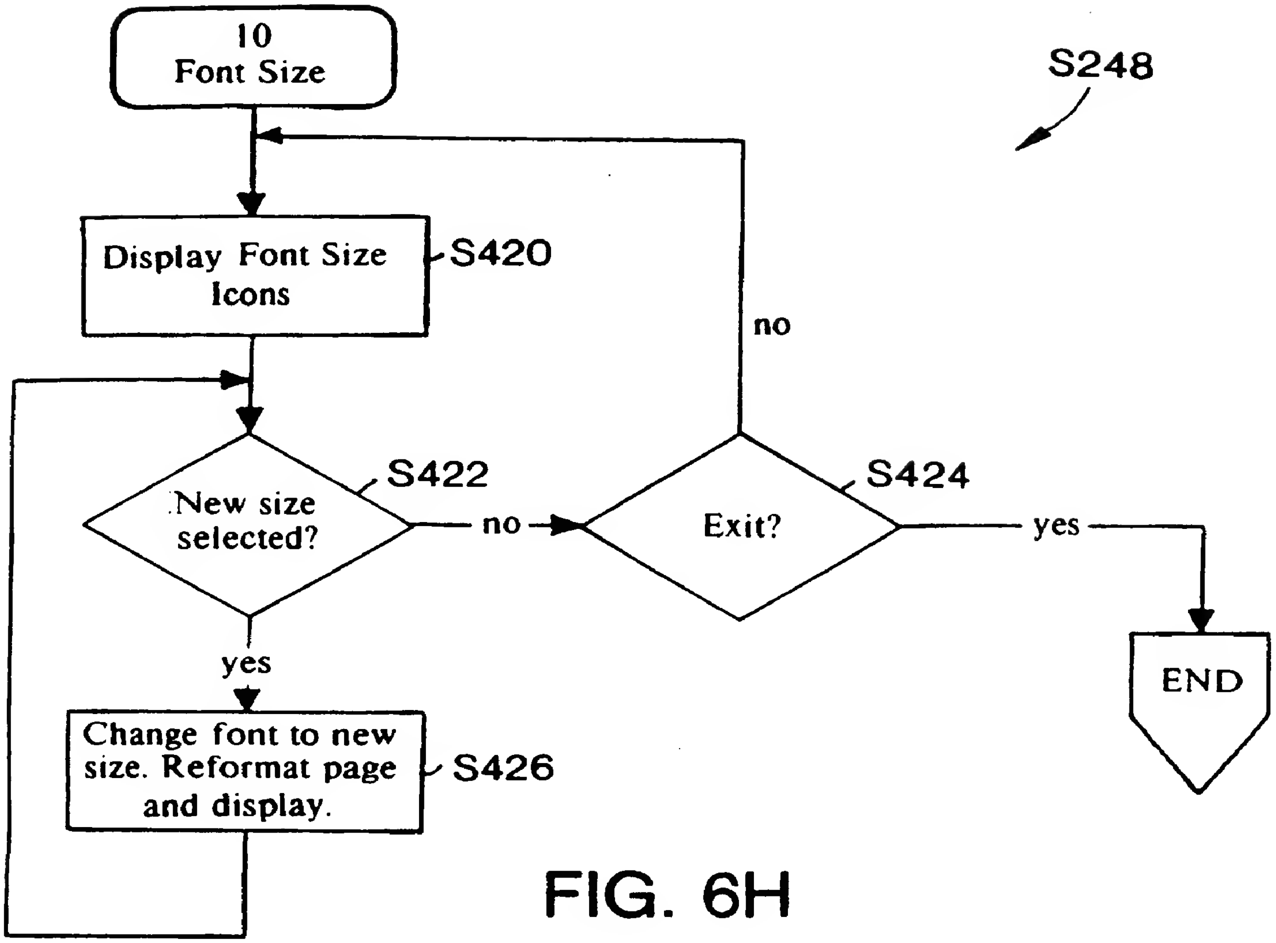

10
Font Size
Display Font Size Icons
S420
New size selected?
S422
no
Exit?
S424
no
yes
END
yes
Change font to new size. Reformat page and display.
S426
S248

FIG. 6H

PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 :
G06F 3/00, H04L 9/00

A3

(11) International Publication Number: **WO 98/08344**

(43) International Publication Date: 26 February 1998 (26.02.98)

(21) International Application Number: PCT/US97/14121

(22) International Filing Date: 8 August 1997 (08.08.97)

(30) Priority Data:
08/693,678 13 August 1996 (13.08.96) US

(71) Applicant *(for all designated States except US)*: THE VIRTUAL PRESS [US/US]; 1075 Curtis Street, Menlo Park, CA 94025 (US).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: SACHS, James [US/US]; 503 Gilbert Avenue, Menlo Park, CA 94025 (US). POMEROY, Thomas, W. [US/US]; 168 Hawthorne, Atherton, CA 94027 (US).

(74) Agents: BLAKELY, Roger, W. et al.; Blakely, Sokoloff, Taylor & Zafman, 7th floor, 12400 Wilshire Boulevard, Los Angeles, CA 90025-1026 (US).

(81) Designated States: AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

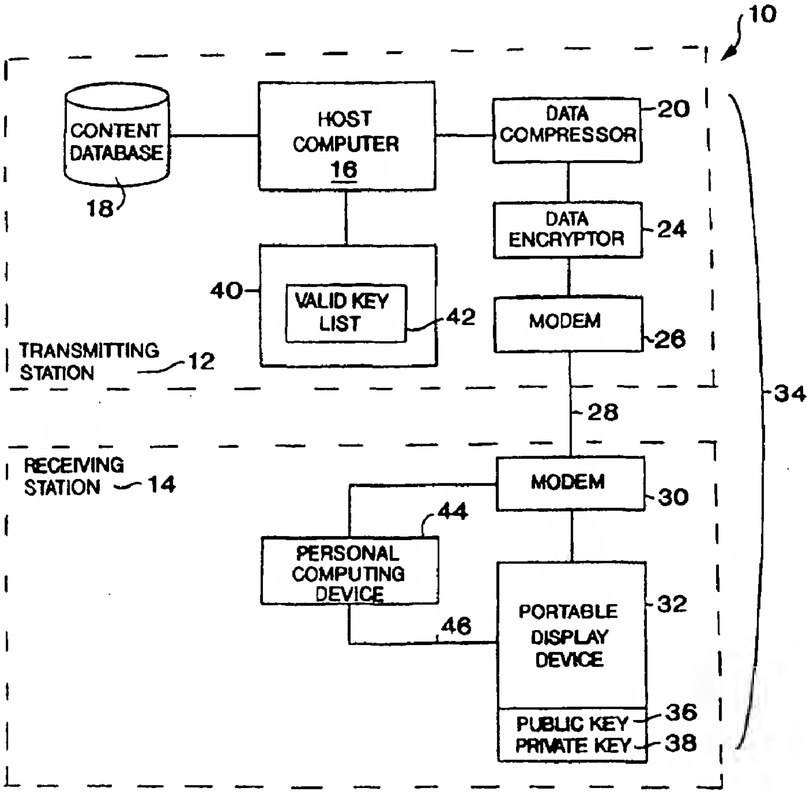
Published
With international search report.

(88) Date of publication of the international search report: 7 May 1998 (07.05.98)

(54) Title: METHOD AND APPARATUS FOR VIEWING ELECTRONIC READING MATERIALS

(57) Abstract

An electronic publishing and distribution system is provided for dissemination of written materials that can be read on a portable electronic book. A host computer (16) contains an inventory that can be selected and then downloaded into the book's memory. The host computer keeps track of the transactions, and encodes the data prior to downloading, using an encryption system (34). The encrypted data cannot be decrypted until it is resident in the memory of the book. Upon receipt of the encrypted data, the book decrypts the data. A plurality of electronic keys is provided corresponding (36, 37) to graphical representations such as icons adjacent to each key.


10
CONTENT DATABASE
18
HOST COMPUTER 16
DATA COMPRESSOR
20
DATA ENCRYPTOR
24
40
VALID KEY LIST
42
MODEM
26
TRANSMITTING STATION
12
28
34
RECEIVING STATION
14
MODEM
30
44
PERSONAL COMPUTING DEVICE
46
PORTABLE DISPLAY DEVICE
32
PUBLIC KEY
36
PRIVATE KEY
38

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania
AM	Armenia
AT	Austria
AU	Australia
AZ	Azerbaijan
BA	Bosnia and Herzegovina
BB	Barbados
BE	Belgium
BF	Burkina Faso
BG	Bulgaria
BJ	Benin
BR	Brazil
BY	Belarus
CA	Canada
CF	Central African Republic
CG	Congo
CH	Switzerland
CI	Côte d'Ivoire
CM	Cameroon
CN	China
CU	Cuba
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
ES	Spain
FI	Finland
FR	France
GA	Gabon
GB	United Kingdom
GE	Georgia
GH	Ghana
GN	Guinea
GR	Greece
HU	Hungary
IE	Ireland
IL	Israel
IS	Iceland
IT	Italy
JP	Japan
KE	Kenya
KG	Kyrgyzstan
KP	Democratic People's Republic of Korea
KR	Republic of Korea
KZ	Kazakstan
LC	Saint Lucia
LI	Liechtenstein
LK	Sri Lanka
LR	Liberia
LS	Lesotho
LT	Lithuania
LU	Luxembourg
LV	Latvia
MC	Monaco
MD	Republic of Moldova
MG	Madagascar
MK	The former Yugoslav Republic of Macedonia
ML	Mali
MN	Mongolia
MR	Mauritania
MW	Malawi
MX	Mexico
NE	Niger
NL	Netherlands
NO	Norway
NZ	New Zealand
PL	Poland
PT	Portugal
RO	Romania
RU	Russian Federation
SD	Sudan
SE	Sweden
SG	Singapore
SI	Slovenia
SK	Slovakia
SN	Senegal
SZ	Swaziland
TD	Chad
TG	Togo
TJ	Tajikistan
TM	Turkmenistan
TR	Turkey
TT	Trinidad and Tobago
UA	Ukraine
UG	Uganda
US	United States of America
UZ	Uzbekistan
VN	Viet Nam
YU	Yugoslavia
ZW	Zimbabwe

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/14121

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :G06F 3/00; H04L 9/00
US CL : 345/339, 348, 349, 350; 380/4, 49
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 345/339, 348, 349, 350, 901; 380/4, 49

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,E --- Y,E	US 5,697,793 A (HUFFMAN ET AL.) 16 December 1997, see figs. 1, 3 and 21.	1--3, 5-9, 11, 17-19, 21-24, 31-41 ----------- 4, 10, 12-16, 20, 25-30, 42-50
Y	US 4,597,058 A (IZUMI ET AL.) 24 June 1996, see fig. 1.	10 and 12-16
Y,P	US 5,629,980 A (STEFIK ET AL.) 13 May 1997, see fig. 1.	4, 20, 25-30 and 42-50

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

26 DECEMBER 1997

Date of mailing of the international search report

25 FEB 1998

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231
Facsimile No. (703) 305-3230

Authorized officer
Abdollah Katbab
Telephone No. (703) 305-9667